Order No: MAC0001007C3

Service Manual

Room Air Conditioner

CS-A73KR/CU-A73KR / CS-A93KR/CU-A93KR / CS-A123KR/ CU-A123KR

Panasonic
COOL
25
°C
TEMP
OPTION
POWERFUL
Panasonic
Panasonic

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⚠ **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

1. Features

- High Efficiency
- Compact Design
- Comfort Environment

- 8 hours of sleep mode operation

- Air purifying filter with deodorizing function to reduce dust, smoke and odours

- Random Auto Restart

- Auto restart at randomly after power failure

- Removable and Washable Front Panel

- Quality Improvement

- Gas leakage protection

- Prevent compressor reverse rotation

- 2-stage OLP to protect compressor

- Service Improvement

- Easy fan motor replacement procedure

- Operation Improvement

- Economy mode to reduce electrical power consumption

- Powerful mode to reach the desired room temperature quickly

- Anti cold draft control

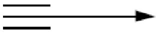
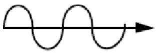
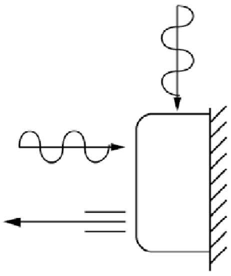
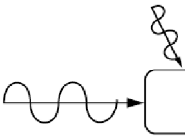
- Long Installation Piping

- CS/CU-A73KR, CS/CU-A93KR, long piping up to 10 meter

- CS/CU-A123KR, long piping up to 15 meter

2. Functions

3. Product Specifications

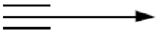
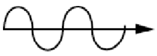
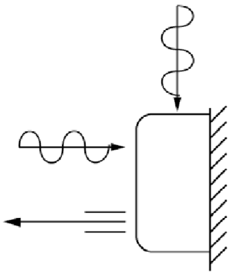
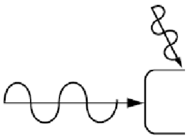
	Unit	CS-A73KR	CU-A73
Cooling Capacity	**kW** **Btu/h**	**2.11 - 2.06** **7,200 - 7,020**	
Heating Capacity	**kW** **Btu/h**	**2.30 - 2.25** **7,840 - 7,670**	
Moisture Removal	**l/h** **Pint/h**	**1.4** **3.0**	
Power Source	**Phase** **V** **Cycle**	**Single** **240 - 220** **50**	
Airflow Method	**OUTLET**  **INTAKE** 	**SIDE VIEW** 	**TOP VI** 

Air Volume	**Indoor Air (Lo)**	**m3/min (cfm)**	**Cooling; 5.9 (206) - 5.5 (194)** **Heating; 7.4 (261) - 6.4 (226)**	**—**
	Indoor Air (Me)	**m3/min (cfm)**	**Cooling; 6.9 (244) - 6.3 (222)** **Heating; 8.0 (282) - 7.4 (261)**	**—**
	Indoor Air (Hi)	**m3/min (cfm)**	**Cooling; 7.7 (272) - 7.2 (250)** **Heating; 8.6 (304) - 8.4 (300)**	**—**
	Indoor Air (SHi)	**m3/min (cfm)**	**Cooling; 8.7 (307) - 8.3 (293)** **Heating; 9.7 (342) - 9.6 (339)**	**—**
	Outdoor Air	**m3/min (cfm)**	**—**	**28.8 (1,017) -**
Noise Level		**dB (A)**	**Cooling; High 33-32, Low 26-24** **Heating; High 36-35, Low 29-27**	**Cooling; Hig** **Heating; Hig**
		Power level dB	**Cooling; High 45-43, Low 37-36** **Heating; High 48-48, Low 41-39**	**Cooling; Hig** **Heating; Hig**

Electrical Data	**Input**		**W**	**Cooling; 660 - 610** **Heating; 640 - 580**	
	Running Current		**A**	**Cooling; 3.2 - 3.0** **Heating; 3.0 - 2.8**	
	COP/EER		**W/W**	**Cooling; 3.20 - 3.38** **Heating; 3.59 - 3.88**	
	Starting Current		**A**	**11.2**	
Piping Connection Port **(Flare piping)**			**inch** **inch**	**G ; Half Union 3/8”** **L ; Half Union 1/4”**	**G ; 3-way va** **L ; 2-way va**
Pipe Size **(Flare piping)**			**inch** **inch**	**G ; (gas side) 3/8”** **L ; (liquid side) 1/4”**	**G ; (gas si** **L ; (liquid si**
Drain	**Inner diameter**		**mm**	**12**	**—**
Hose	**Length**		**m**	**0.7**	**—**
Power Cord Length			**m**	**2.0**	**—**
Number of core-wire				**3 (1.0 mm^2)**	**—**
Dimensions	**Height**		**inch (mm)**	**10 - 31/32 (279)**	**18 - 29/32**
	Width		**inch (mm)**	**31 - 15/32 (799)**	**30 - 23/32**
	Depth		**inch (mm)**	**7 - 15/32 (190)**	**9 - 21/32**
Net Weight			**lb (kg)**	**20 (9.0)**	**64 (29.**
Compressor		**Type**		**—**	**Rotary (1 c** **rolling pist**
	Motor	**Type**		**—**	**Induction (**
	Rated	**Output**	**W**	**—**	**550**
Air Circulation		**Type**		**Cross-flow Fan**	**Propeller**
		Material		**AS + Glass Fiber 30%**	**AES + Glass**
	Motor	**Type**		**Induction (4-poles)**	**Induction (**
		Input	**W**	**29.0 - 27.0**	**65.8 - 5**
	Rate	**Output**	**W**	**10**	**20**
	Fan Speed	**Low**	**rpm**	**810 - 770**	**—**
		Medium	**rpm**	**940 - 890**	**—**
		High	**rpm**	**1,050 - 1,010**	**755 - 7**
		SuperHigh	**rpm**	**1,190 - 1,160**	**—**
Heat Exchanger	**Description**			**Evaporator**	**Conden**
	Tube material			**Copper**	**Copp**
	Fin material			**Aluminium (Pre Coat)**	**Aluminium (**
	Fin Type			**Slit Fin**	**Louver**
	Row / Stage			**(Plate fin configuration, forced dr**	
				2 × 14	**1 × 1**
	FPI			**18**	**19**
	Size (W × H × L)		**mm**	**614 × 294 × 25.4**	**856 × 457.**
Refrigerant Control Device				**—**	**Capillary**

Refrigeration Oil		**(c.c)**	**—**	**SUNISO 4G ATMOS M6**
Refrigerant (R-22)		**g (oz)**	**—**	**860 (30**
Thermostat			**Electronic Control**	**—**
Protection Device			**—**	**Overload P**
Capillary Tube	**Length**	**mm**	**—**	**Cooling; 920, 360**
	Flow Rate	**l/min**	**—**	**Cooling; 4.0, H**
	Inner Diameter	**mm**	**—**	**Cooling; 1.1, H**
Air Filter	**Material**	**(c.c)**	**P.P.**	**—**
	Style		**Honeycomb**	
Capacity Control			**Capillary Tube**	
Compressor Capacitor		**μF, VAC**	**—**	**1.5 μF, 4**
Fan Motor Capacitor		**μF, VAC**	**1.5 μF, 400VAC**	**1.2 μF, 4**

- Specifications are subject to change without notice for further improvement.

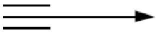
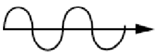
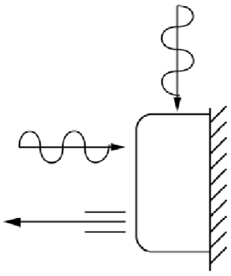
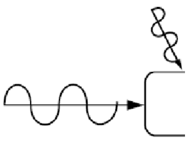
		Unit	**CS-A93KR**	**CU-A93**
Cooling Capacity		**kW Btu/h**	**2.65 - 2.60 9,040 - 8,870**	
Heating Capacity		**kW Btu/h**	**3.20 - 3.10 10,900 - 10,600**	
Moisture Removal		**l/h Pint/h**	**1.6 3.4**	
Power Source		**Phase V Cycle**	**Single 240 - 220 50**	
Airflow Method		**OUTLET**  **INTAKE** 	**SIDE VIEW** 	**TOP VI** 

Air Volume	**Indoor Air (Lo)**	**m3/min (cfm)**	**Cooling; 6.5 (229) - 6.1 (215)** **Heating; 6.8 (240) - 6.7 (237)**	**—**
	Indoor Air (Me)	**m3/min (cfm)**	**Cooling; 7.8 (275) - 7.4 (261)** **Heating; 8.2 (289) - 8.1 (286)**	**—**
	Indoor Air (Hi)	**m3/min (cfm)**	**Cooling; 9.4 (330) - 8.9 (310)** **Heating; 9.9 (350) - 9.7 (340)**	**—**
	Indoor Air (SHi)	**m3/min (cfm)**	**Cooling; 9.9 (349) - 9.4 (332)** **Heating; 10.4 (367) - 10.2 (360)**	**—**
	Outdoor Air	**m3/min (cfm)**	**—**	**28.8 (1,017) -**
Noise Level		**dB (A)**	**Cooling; High 39-38, Low 29-26** **Heating; High 39-39, Low 30-27**	**Cooling; Hig** **Heating; Hig**
		Power level (dB)	**Cooling; High 52-50, Low 41-38** **Heating; High 52-52, Low 43-39**	**Cooling; Hig** **Heating; Hig**

Electrical Data	**Input**		**W**	**Cooling; 970 - 920** **Heating; 910 - 840**	
	Running Current		**A**	**Cooling; 4.3 - 4.3** **Heating; 4.0 - 3.9**	
	COP/EER		**W/W**	**Cooling; 2.73 - 2.83** **Heating; 3.52 - 3.69**	
	Starting Current		**A**	**17.1**	
Piping Connection Port (Flare piping)			**inch** **inch**	**G ; Half Union 3/8”** **L ; Half Union 1/4”**	**G ; 3-way va** **L ; 2-way va**
Pipe Size (Flare piping)			**inch** **inch**	**G ; (gas side) 3/8”** **L ; (liquid side) 1/4”**	**G ; (gas si** **L ; (liquid si**
Drain Hose	**Inner diameter**		**mm**	**12**	**—**
	Length		**m**	**0.7**	**—**
Power Cord Length			**m**	**2.0**	**—**
Number of core-wire				**3 (1.0 mm2)**	**—**
Dimensions	**Height**		**inch (mm)**	**10 - 31/32 (279)**	**18 - 29/32**
	Width		**inch (mm)**	**31 - 15/32 (799)**	**30 - 23/32**
	Depth		**inch (mm)**	**7 - 15/32 (190)**	**9 - 21/32**
Net Weight			**lb (kg)**	**20 (9.0)**	**71 (32.**
Compressor		**Type**		**—**	**Rotary (1 c** **rolling pist**
	Motor	**Type**		**—**	**Induction (**
	Rated	**Output**	**W**	**—**	**750**
Air Circulation		**Type**		**Cross-flow Fan**	**Propeller**
		Material		**AS + Glass Fiber 30%**	**AES + Glass**
	Motor	**Type**		**Induction (4-poles)**	**Induction (**
		Input	**W**	**37.0 - 34.0**	**65.8 - 5**
	Rate	**Output**	**W**	**14**	**20**
	Fan Speed	**Low**	**rpm**	**880 - 770**	**—**
		Medium	**rpm**	**1,060 - 945**	**—**
		High	**rpm**	**1,275 - 1,215**	**755 - 7**
		SuperHigh	**rpm**	**1,340 - 1,315**	**—**
Heat Exchanger	**Description**			**Evaporator**	**Conden**
	Tube material			**Copper**	**Copp**
	Fin material			**Aluminium (Pre Coat)**	**Aluminium (**
	Fin Type			**Slit Fin**	**Louver**
	Row / Stage			**(Plate fin configuration, forced dr**	
				2 × 14	**1 × 1**
	FPI			**18**	**19**
	Size (W × H × L)		**mm**	**614 × 294 × 25.4**	**856 × 457.**
Refrigerant Control Device				**—**	**Capillary**

Refrigeration Oil		(c.c)	—	SUNISO 4G ATMOS M6
Refrigerant (R-22)		g (oz)	—	850 (30
Thermostat			Electronic Control	—
Protection Device			—	Overload P
Capillary Tube	Length	mm	—	Cooling; 1,075 325
	Flow Rate	l/min	—	Cooling; 5.0, 13.4
	Inner Diameter	mm	—	Cooling; 1.2, H
Air Filter	Material Style	(c.c)	P.P. Honeycomb	—
Capacity Control			Capillary Tube	
Compressor Capacitor		µ F, VAC	—	25 µ F, 37
Fan Motor Capacitor		µ F, VAC	1.5 µ F, 400VAC	1.2 µ F, 4

- **Specifications are subject to change without notice for further improvement.**

	Unit	CS-A123KR	CU-A12
Cooling Capacity	kW Btu/h	3.40 - 3.40 11,600 - 11,600	
Heating Capacity	kW Btu/h	4.15 - 4.05 14,200 - 13,800	
Moisture Removal	l/h Pint/h	2.1 4.4	
Power Source	Phase V Cycle	Single 240 - 220 50	
Airflow Method	OUTLET  INTAKE 	SIDE VIEW 	TOP VI 

Air Volume	**Indoor Air (Lo)**	**m3/min (cfm)**	**Cooling; 7.6 (268) - 6.8 (240)** **Heating; 8.0 (281) - 7.4 (261)**	**—**
	Indoor Air (Me)	**m3/min (cfm)**	**Cooling; 8.2 (289) - 7.7 (272)** **Heating; 8.6 (303) - 8.2 (289)**	**—**
	Indoor Air (Hi)	**m3/min (cfm)**	**Cooling; 9.2 (320) - 8.8 (310)** **Heating; 9.7 (340) - 9.5 (340)**	**—**
	Indoor Air (SHi)	**m3/min (cfm)**	**Cooling; 9.6 (339) - 9.5 (335)** **Heating; 10.2 (360) - 10.3 (364)**	**—**
	Outdoor Air	**m3/min (cfm)**	**—**	**35.0 (1,236) - 3**
Noise Level		**dB (A)**	**Cooling; High 39-39, Low 35-33** **Heating; High 39-39, Low 34-32**	**Cooling; Hig** **Heating; Hig**
		Power level (dB)	**Cooling; High 52-52, Low 46-44** **Heating; High 52-52, Low 45-43**	**Cooling; Hig** **Heating; Hig**

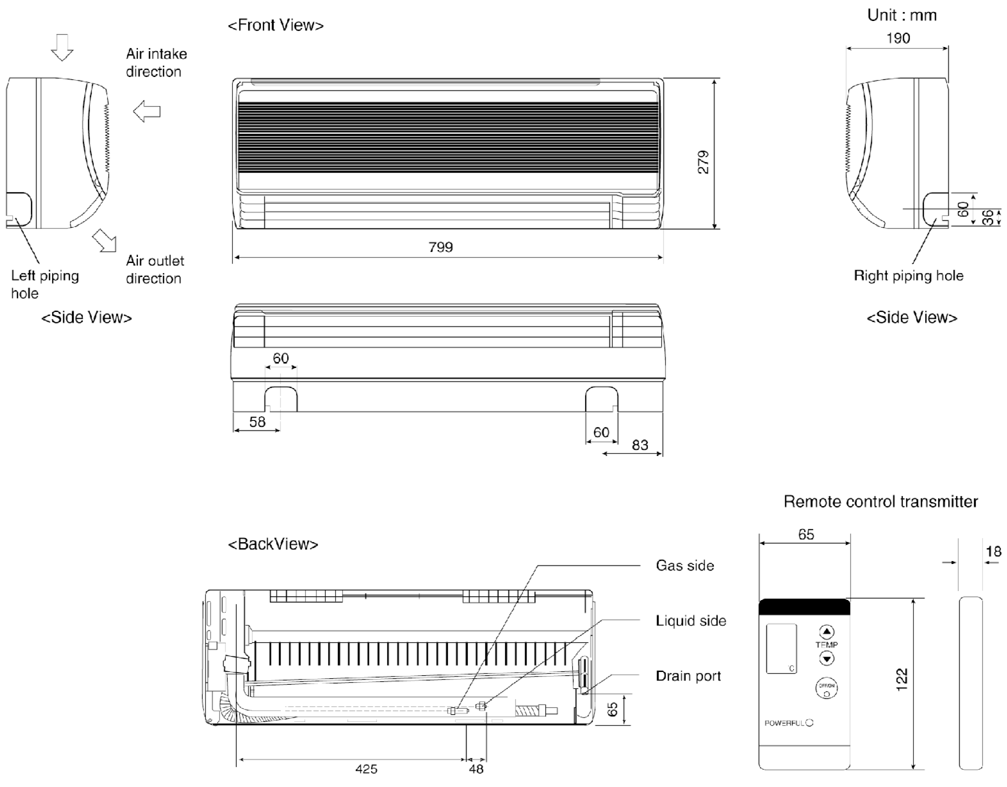
Electrical Data	Input		kW	Cooling; 1.31 - 1.26 Heating; 1.24 - 1.19	
	Running Current		A	Cooling; 5.4 - 5.6 Heating; 5.0 - 5.2	
	COP/EER		W/W	Cooling; 2.60 - 2.70 Heating; 3.35 - 3.40	
	Starting Current		A	26	
Piping Connection Port (Flare piping)			inch inch	G ; Half Union 1/2” L ; Half Union 1/4”	G ; 3-way va L ; 2-way va
Pipe Size (Flare piping)			inch inch	G ; (gas side) 1/2” L ; (liquid side) 1/4”	G ; (gas si L ; (liquid si
Drain	Inner diameter		mm	12	—
Hose	Length		m	0.7	—
Power Cord Length			m	2.0	—
Number of core-wire				3 (1.0 mm2)	—
Dimensions	Height		inch (mm)	10 - 31/32 (279)	21 - 1/4 (
	Width		inch (mm)	31 - 15/32 (799)	27 - 17/32
	Depth		inch (mm)	7 - 15/32 (190)	11 - 7/32
Net Weight			lb (kg)	20 (9.0)	86 (39.
Compressor		Type		—	Rotary (1 c rolling pist
	Motor	Type		—	Induction (
	Rated	Output	W	—	1,10
Air Circulation		Type		Cross-flow Fan	Propelle
		Material		AS + Glass Fiber 30%	AES + Glass
	Motor	Type		Induction (4-poles)	Induction (
		Input	W	35.5 - 33.0	71.0 - 6
	Rate	Output	W	15	25
	Fan Speed	Low	rpm	1,060 - 965	—
		Medium	rpm	1,150 - 1,065	—
		High	rpm	1,290 - 1,240	805 - 7
		SuperHigh	rpm	1,360 - 1,340	—
Heat Exchanger	Description			Evaporator	Conden
	Tube material			Copper	Copp
	Fin material			Aluminium (Pre Coat)	Aluminium (
	Fin Type			Slit Fin	Louver
	Row / Stage			(Plate fin configuration, forced dr	
				2 × 14	1 × 2
	FPI			21	18
	Size (W × H × L)		mm	614 × 294 × 25.4	782.9 × 50
Refrigerant Control Device				—	Capillary

Refrigeration Oil		**(c.c)**	**—**	**SUNISO 4G ATMOS M6**
Refrigerant (R-22)		**g (oz)**	**—**	**990 (34**
Thermostat			**Electronic Control**	**—**
Protection Device			**—**	**Overload Pı**
Capillary Tube	**Length**	**mm**	**—**	**Cooling; 1,100 470**
	Flow Rate	**l/min**	**—**	**Cooling; 6.0, 13.4**
	Inner Diameter	**mm**	**—**	**Cooling; 1.3, H**
Air Filter	**Material Style**	**(c.c)**	**P.P. Honeycomb**	**—**
Capacity Control			**Capillary Tube**	
Compressor Capacitor		**μ F, VAC**	**—**	**30 μ F, 37**
Fan Motor Capacitor		**μ F, VAC**	**1.5 μ F, 400VAC**	**1.5 μ F, 4(**

- Specifications are subject to change without notice for further improvement.

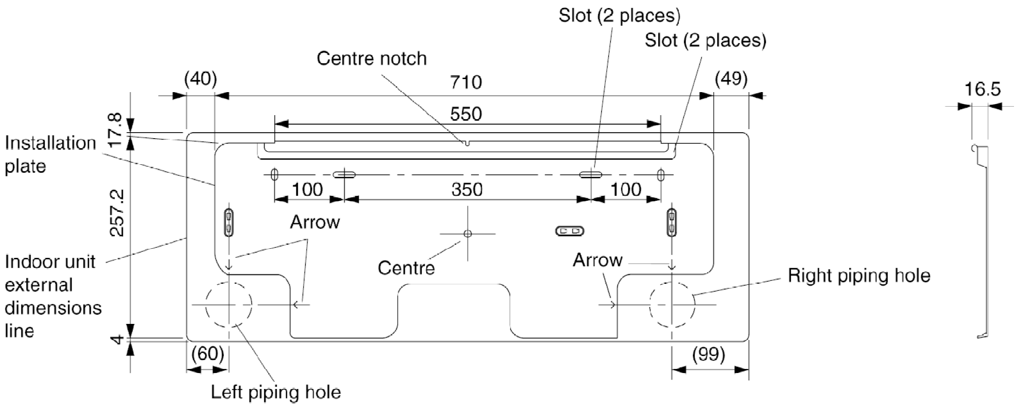
4. Dimensions

CS-A73KR / CS-A93KR / CS-A123KR

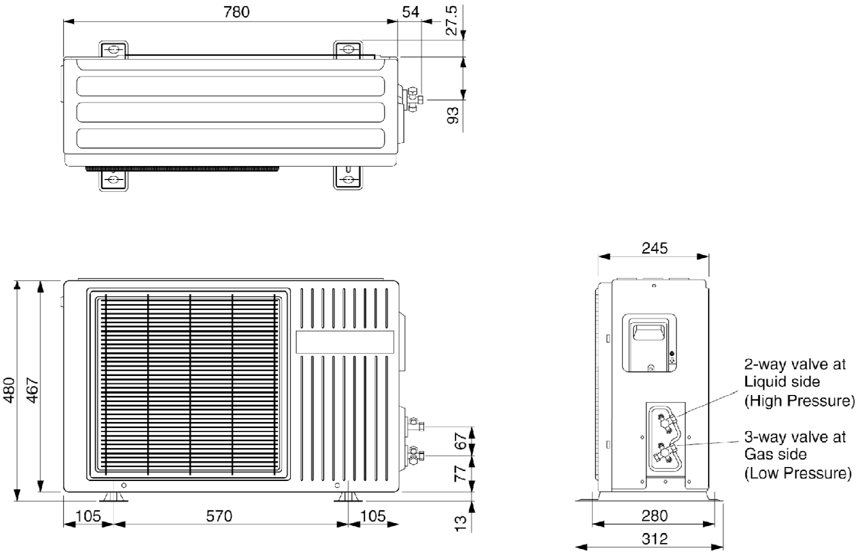


<Front View>
Unit : mm
190
Air intake direction
279
799
60
36
Left piping hole
Air outlet direction
Right piping hole
<Side View>
<Side View>
60
58
60
83
Remote control transmitter
65
18
<BackView>
Gas side
Liquid side
Drain port
65
122
425
48
TEMP
OFF/ON
POWERFUL

Relative position between the indoor unit and the installation plate <Front View>

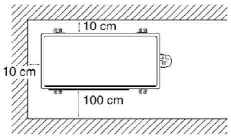

Slot (2 places)
Slot (2 places)
Centre notch
(40)
710
(49)
16.5
550
17.8
Installation plate
257.2
100
350
100
Arrow
Centre
Arrow
Indoor unit external dimensions line
Right piping hole
4
(60)
(99)
Left piping hole

CU-A73KR / CU-A93KR

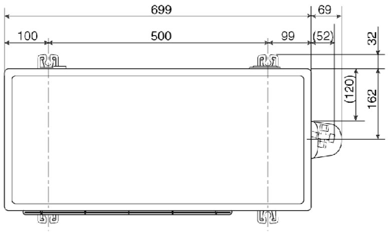

780
54
27.5
93
245
480
467
67
77
13
105
570
105
280
312
2-way valve at Liquid side (High Pressure)
3-way valve at Gas side (Low Pressure)

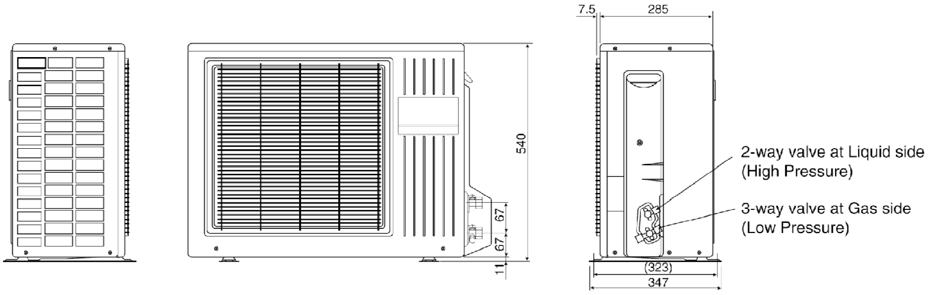
CU-A123KR

Space necessary for installation


10 cm
10 cm
100 cm

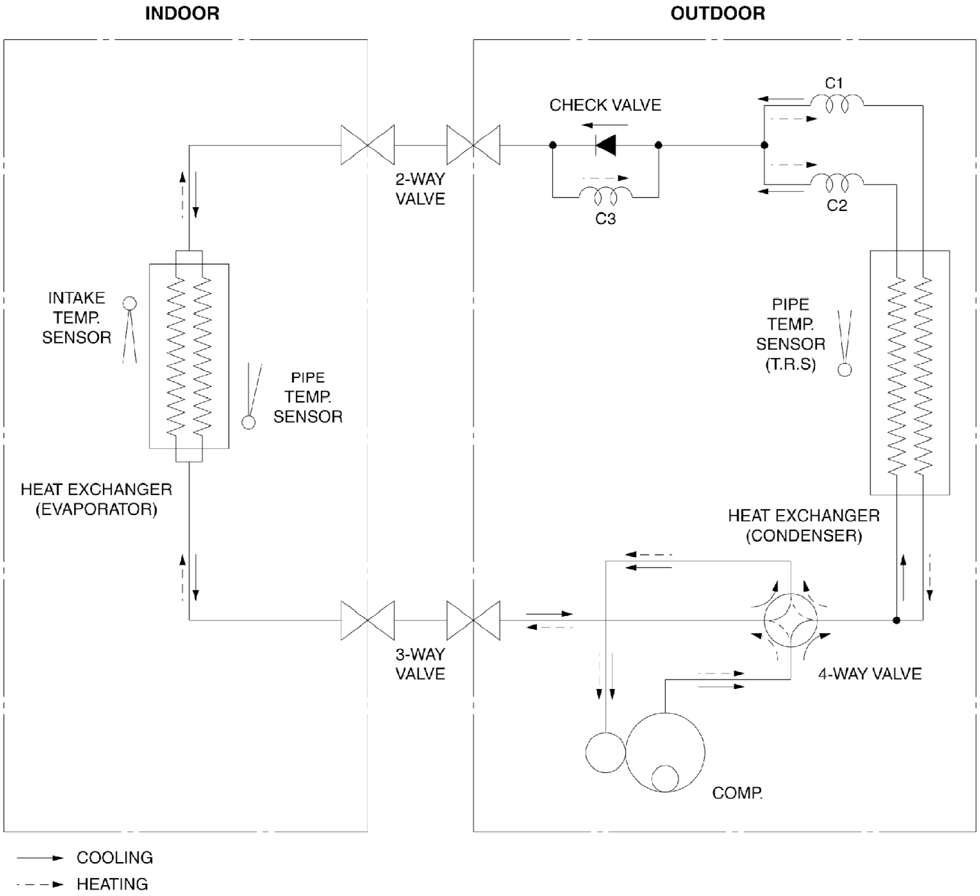
Anchor Bolt Pitch
323 x 500


699
69
100
500
99
(52)
32
(120)
162


7.5
285
540
67
67
11
(323)
347
2-way valve at Liquid side
(High Pressure)
3-way valve at Gas side
(Low Pressure)

5. Refrigeration Cycle Diagram

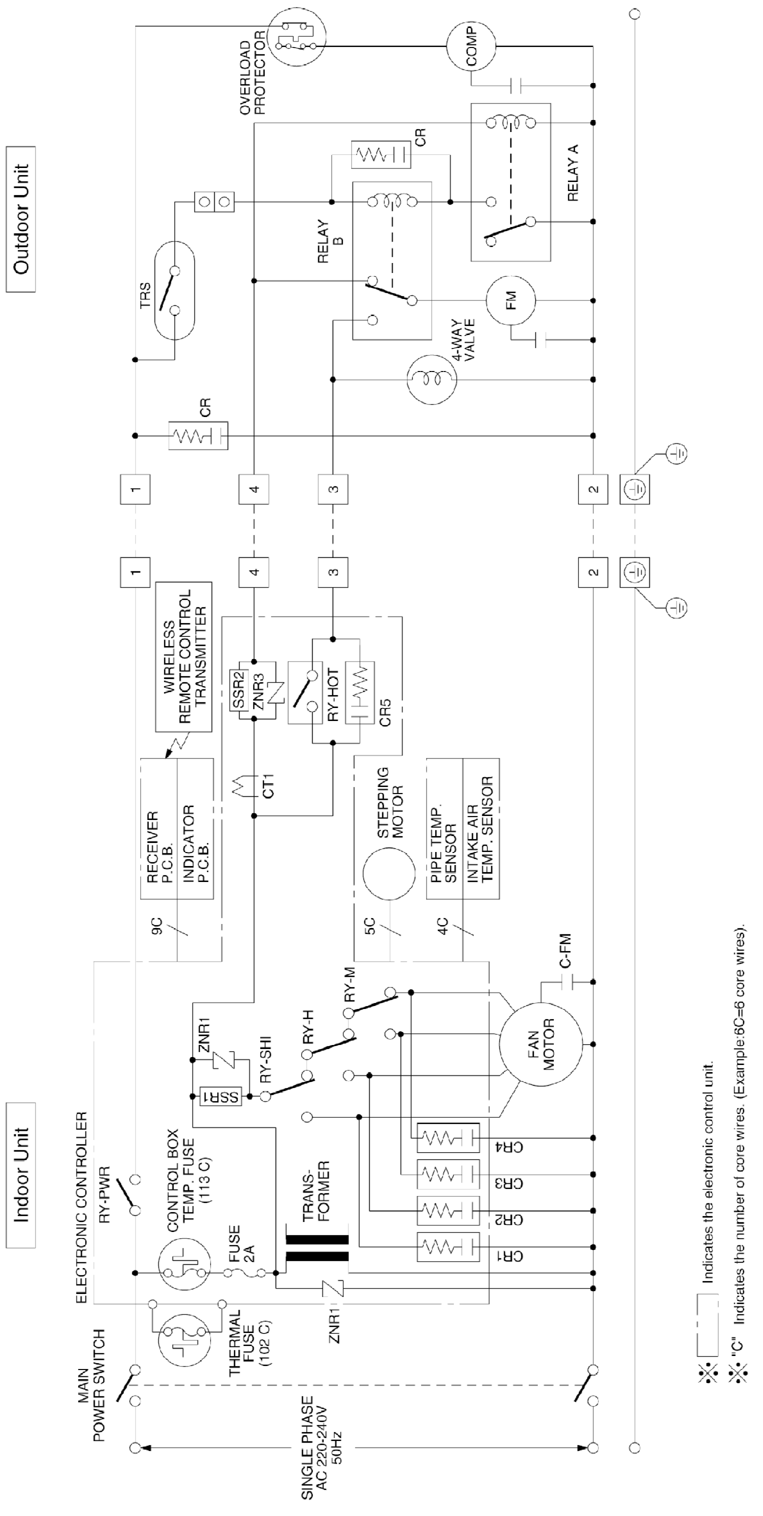
CS-A73KR / CU-A73KR
CS-A93KR / CU-A93KR
CS-A123KR / CS-A123KR


INDOOR
OUTDOOR
CHECK VALVE
C1
C2
C3
2-WAY VALVE
INTAKE TEMP. SENSOR
PIPE TEMP. SENSOR
PIPE TEMP. SENSOR (T.R.S)
HEAT EXCHANGER (EVAPORATOR)
HEAT EXCHANGER (CONDENSER)
3-WAY VALVE
4-WAY VALVE
COMP.
COOLING
HEATING

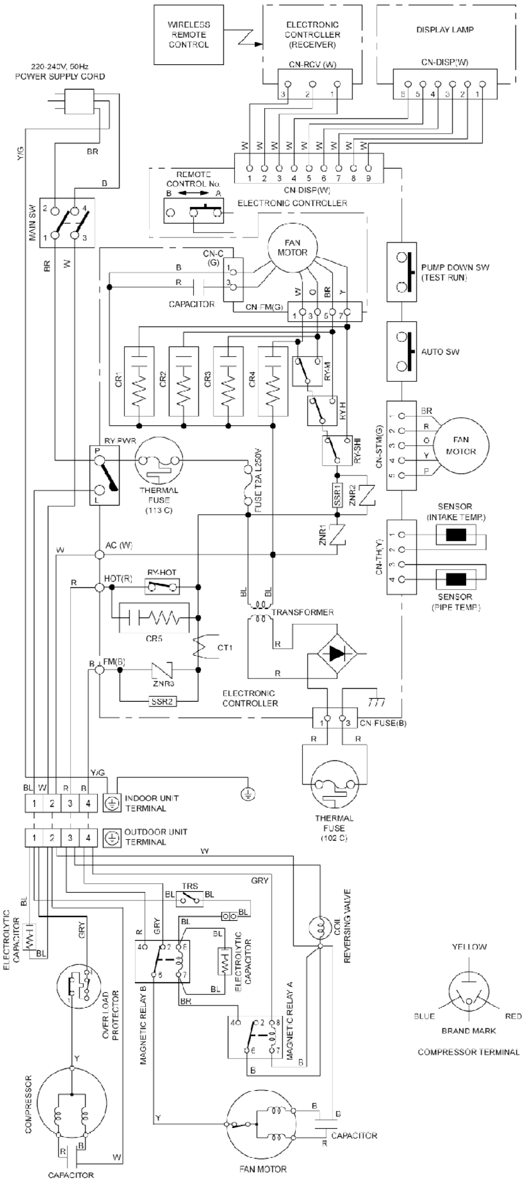
6. Block Diagram

7. Wiring Diagram

CS-A73KR / CU-A73KR
CS-A93KR / CU-A93KR
CS-A123KR / CU-A123KR


Outdoor Unit
Indoor Unit
OVERLOAD PROTECTOR
COMP
CR
RELAY A
RELAY B
TRS
FM
4-WAY VALVE
CR
1
4
3
2
1
4
3
2
WIRELESS REMOTE CONTROL TRANSMITTER
SSR2
ZNR3
RY-HOT
CR5
CT1
RECEIVER P.C.B.
INDICATOR P.C.B.
9C
STEPPING MOTOR
5C
PIPE TEMP. SENSOR
INTAKE AIR TEMP. SENSOR
4C
C-FM
ELECTRONIC CONTROLLER
RY-PWR
ZNR1
SSR1
RY-SHI
RY-H
RY-M
FAN MOTOR
CONTROL BOX TEMP. FUSE (113 C)
FUSE 2A
TRANS-FORMER
CR4
CR3
CR2
CR1
MAIN POWER SWITCH
THERMAL FUSE (102 C)
ZNR1
SINGLE PHASE AC 220-240V 50Hz
※ Indicates the electronic control unit.
※ "C" Indicates the number of core wires. (Example:6C=6 core wires).

CS-A73KR / CU-A73KR
CS-A93KR / CU-A93KR
CS-A123KR / CU-A123KR


WIRELESS REMOTE CONTROL
ELECTRONIC CONTROLLER (RECEIVER)
CN-RCV (W)
DISPLAY LAMP
CN-DISP(W)
220-240V, 50Hz POWER SUPPLY CORD
Y/G
BR
B
MAIN SW
REMOTE CONTROL No.
B A
CN-DISP(W)
ELECTRONIC CONTROLLER
FAN MOTOR
CN-C (G)
CAPACITOR
CN-FM(G)
W O BR Y
PUMP DOWN SW (TEST RUN)
AUTO SW
CR1
CR2
CR3
CR4
RY-M
RY-H
RY-SHI
CN-STM(G)
FAN MOTOR
RY-PWR
THERMAL FUSE (113 C)
FUSE T2A L250V
SSR1
ZNR2
ZNR1
SENSOR (INTAKE TEMP.)
CN-TH(Y)
SENSOR (PIPE TEMP.)
AC (W)
HOT(R)
RY-HOT
CR5
CT1
FM(B)
ZNR3
SSR2
TRANSFORMER
ELECTRONIC CONTROLLER
CN-FUSE(B)
THERMAL FUSE (102 C)
INDOOR UNIT TERMINAL
OUTDOOR UNIT TERMINAL
TRS
GRY
COIL REVERSING VALVE
ELECTROLYTIC CAPACITOR
OVER LOAD PROTECTOR
MAGNETIC RELAY B
ELECTROLYTIC CAPACITOR
MAGNETIC RELAY A
COMPRESSOR
CAPACITOR
FAN MOTOR
CAPACITOR
YELLOW
BLUE
RED
BRAND MARK
COMPRESSOR TERMINAL

REMARKS

B : BLUE
BR : BROWN
BL : BLACK
W : WHITE
R : RED
O : ORANGE
P : PINK
Y/G : YELLOW/GREEN

Resistance of Indoor Fan Motor Windings

MODEL	CS-A73KR	CS-A93KR	CS-A123KR
CONNECTION	CWA92288	CWA92296	CWA92290
YELLOW-BLUE	536.5 Ω	450.8 Ω	457.4 Ω
YELLOW-BROWN	77.1 Ω	56.9 Ω	56.1 Ω
BROWN-ORANGE	43.9 Ω	74.2 Ω	61.2 Ω
ORANGE-WHITE	42.7 Ω	37.3 Ω	25.3 Ω
WHITE-RED	111.4 Ω	122.6 Ω	142.5 Ω

Resistance of Outdoor Fan Motor Windings

MODEL	CU-A73KR	CU-A93KR	CU-A123KR
CONNECTION	CWA95245	←	CWA95381
BLUE-YELLOW	260.5 Ω	←	174.5 Ω
YELLOW-RED	446.0 Ω	←	331.0 Ω

Resistance of Compressor Windings

MODEL	CU-A73KR	CU-A93KR	CU-A123KR
CONNECTION	2RS122D5AB02	2PS164D3AD02	2KS224D5CA02
C-R	5.627 Ω	3.429 Ω	2.211 Ω
C-S	12.19 Ω	4.763 Ω	2.924 Ω

8. Operation Details

8.1. Cooling Mode Operation

Cooling in operation according to Remote Control setting.

Time Delay Safety Control (3 minutes)

- **When the compressor is stopped by Power Switch or Remote Control, it restarts after 3 minutes when the Power Switch or Remote Control is turned ON.**

- When the setting temperature is reached during cooling operation, the compressor stops and it will not start for 3 minutes.

7 minutes Time Saved Control

- The compressor will start automatically if it has stopped for 7 minutes even if the room temperature is between the compressor ON temperature and OFF temperature.

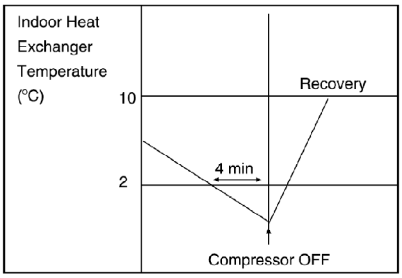
Starting Current Control

- When the compressor, outdoor fan motor & indoor fan motor are simultaneously started, the indoor fan motor will operate 1.6 second later.

Anti-Freezing Control

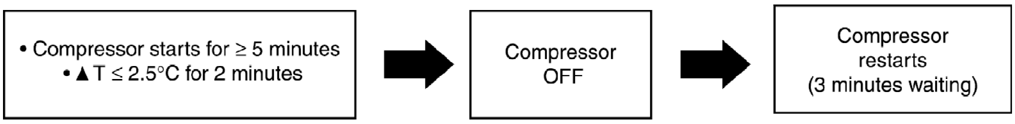
- If the temperature of the indoor heat exchanger falls continuously below 2°C for 4 minutes or more, the compressor turns off to protect the indoor heat exchanger from freezing. The fan speed setting remains the same.
- Compressor will restart again when the indoor heat exchanger temperature rises to 10°C (Recovery).

※3 minutes waiting of Time Delay Safety Control is valid for Cooling Operation.



Compressor Reverse Rotation Protection Control

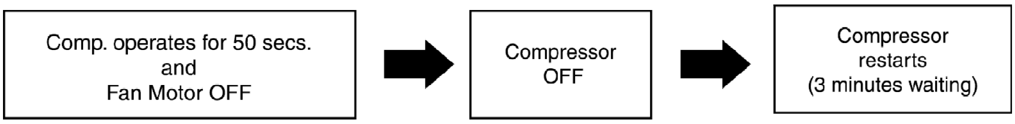
- **If the compressor is operating continuously for 5 minutes or longer and the temperature difference between intake air and indoor heat exchanger is 2.5°C or less for 2 minutes, compressor will stop and restart automatically. / (Time Delay Safety Control is valid)**


• Compressor starts for ≥ 5 minutes
• ▲T ≤ 2.5°C for 2 minutes
Compressor OFF
Compressor restarts (3 minutes waiting)

▲ T = Intake air temperature - Indoor heat exchanger temperature / This is to protect reverse rotation of the compressor when there is a instantaneous power failure.

Compressor Protection Control

- **After the compressor starts for 50 seconds but the outdoor fan motor is still OFF, the compressor will stop and restart automatically. (Time Delay Safety Control is valid).**

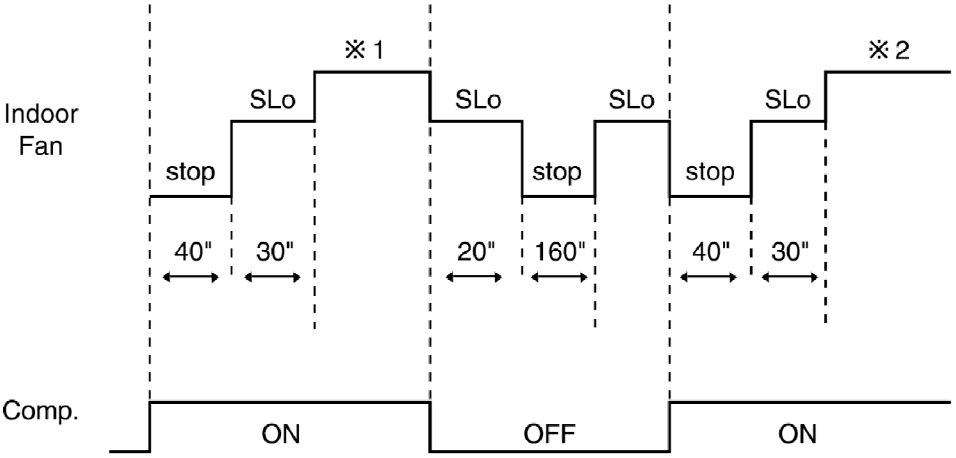

Comp. operates for 50 secs. and Fan Motor OFF
Compressor OFF
Compressor restarts (3 minutes waiting)

- **If the above phenomenon is repeated for 3 times, the compressor will stops.**
- **The above phenomenon is reset when there is a change to heating mode or stopped by Remote Control Switch.**

Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during cooling operation.

- **Fan speed rotates in the range of Hi to Me.**
- **Deodorizing Control.**

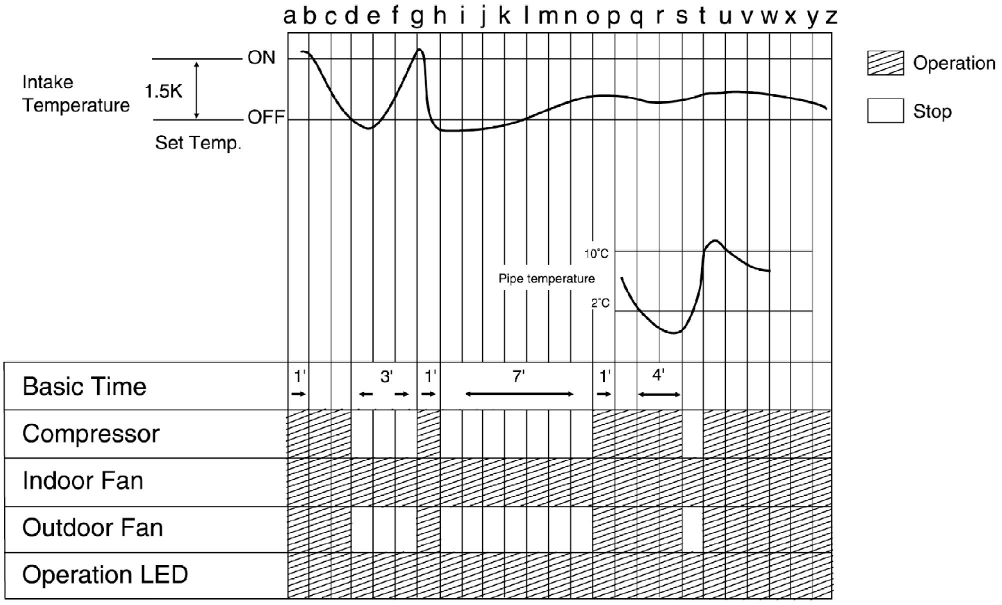

Indoor Fan
※1
※2
stop
SLo
SLo
SLo
stop
stop
SLo
40"
30"
20"
160"
40"
30"
Comp.
ON
OFF
ON

※ 1 Fan Speed is Hi until the compressor stops (when the room temperature reaches setting temperature).

※ 2 Fan Speed is Me after the compressor restarts.

※ SLo: Indoor Fan rotates at 4 second intervals at low speed.

Cooling Operation Time Diagram


a b c d e f g h i j k l m n o p q r s t u v w x y z
Intake Temperature
1.5K
ON
OFF
Set Temp.
Operation
Stop
10°C
Pipe temperature
2°C
Basic Time
1'
3'
1'
7'
1'
4'
Compressor
Indoor Fan
Outdoor Fan
Operation LED

<Description of operation>

d – g : Time Delay Safety Control (waiting for 3 minutes)
g – h : 60 sec. Forced Operation
h – o : 7 min. Time Saved Control
q – t : Anti Freezing Control

8.2. Soft Dry Mode Operation

- The unit starts cooling operation until the room temperature reaches the setting temperature set on the Remote Control, and

then Soft Dry operation will start.

- **During Soft Dry operation, the Indoor Fan will operate and stop at 4-second intervals at low speed.**
- **The operation will be switched on and off for up to 10 minutes “ON” and 6 minutes “OFF”. Once Soft Dry operation is turned off, it stops for 6 minutes.**

Time Delay Safety Control

- **Once the compressor stops, it will not start for 3 minutes during Cooling operation.**

Starting Current Control

- **Same as Starting Current Control for Cooling Mode operation.**

Anti-Freezing Control

- **Same as Anti-Freezing Control for Cooling Mode operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.) /**

Compressor Reverse Rotation Protection Control

- **Same as Compressor Reverse Rotation Protection Control for Cooling Mode Operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.)**

Compressor Protection Control

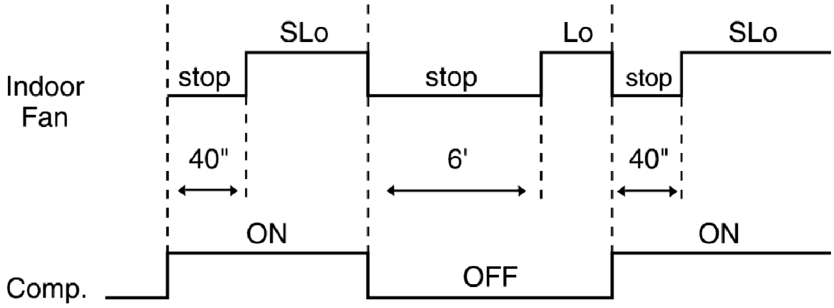
- **Same as Compressor Protection Control for Cooling Mode Operation.**

Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during Soft Dry operation.

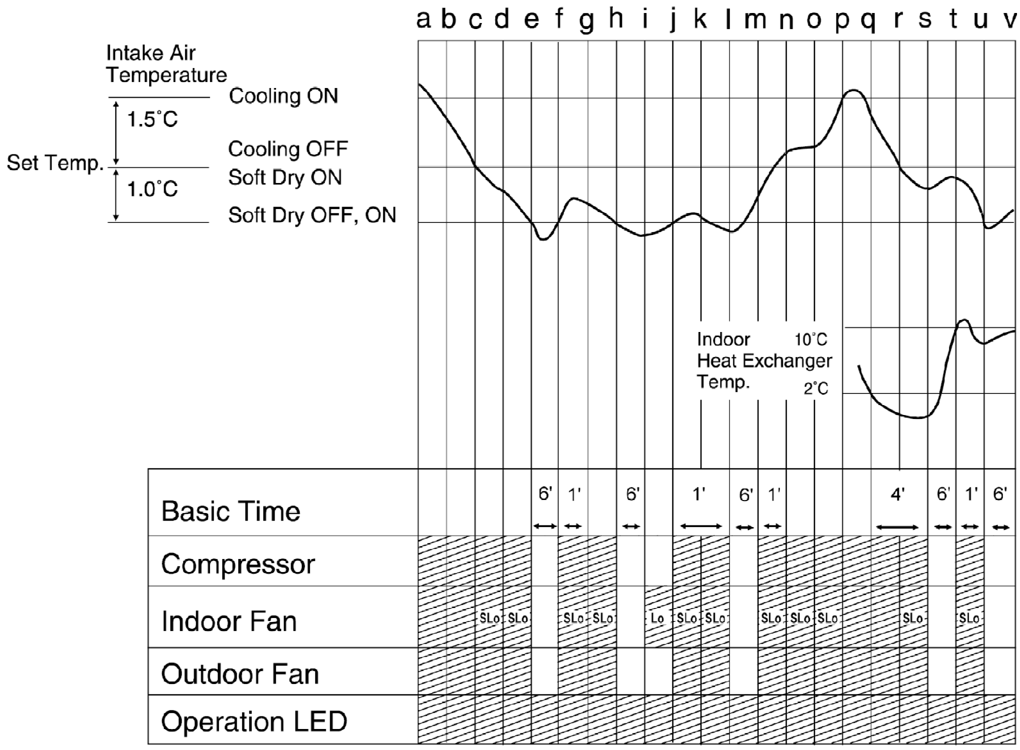
- Fan speed rotates at SLo and Lo speed.

- Deodorizing Control.


SLo
Lo
SLo
Indoor Fan
stop
stop
stop
40"
6'
40"
ON
ON
Comp.
OFF

※ SLo: Indoor Fan rotates at 4-second intervals at low speed.

Soft Dry Operation Time Diagram


a b c d e f g h i j k l m n o p q r s t u v
Intake Air Temperature
Cooling ON
1.5°C
Set Temp.
Cooling OFF
Soft Dry ON
1.0°C
Soft Dry OFF, ON
Indoor Heat Exchanger Temp.
10°C
2°C
Basic Time
6'
1'
6'
1'
6'
1'
4'
6'
1'
6'
Compressor
Indoor Fan
SLo
Lo
Outdoor Fan
Operation LED

<Description of operation>

a – c, p ~ r : Cooling Operation

c – p, r – v : Soft Dry Operation

e – f : Soft Dry OFF

j – l : 60 sec. Forced Operation

q – t : Anti Freezing Control

▨ Operation

☐ Stop

8.3. Heating Mode Operation

Heating in operation according to Remote Control setting.

Time Delay Safety Control

- **When the compressor is stopped by Power Switch or Remote Control, it restarts after 3 minutes when the Power Switch or Remote Control is turned ON.**
- **When the setting temperature is reached during heating operation, the compressor stops and it will not start for 4 minutes. / Indoor Fan stops for 1 minutes after 3 minutes compressor stops. Then, it will operate with Lo– fan speed for 40 seconds then change to SLo fan speed**

30 minutes Time Saved Control

- The compressor will start automatically if it has stopped for 30 minutes even if the room temperature is below the compressor ON temperature.

Overload Protection Control

- If the temperature of the indoor heat exchanger rises to 51°C, Outdoor Fan stops.
  The Outdoor Fan restarts when the indoor heat exchanger temperature falls to 49°C.
- If the indoor heat exchanger becomes 65°C or more, the compressor will stop and restart automatically.
  (Time Delay Safety Control - 4 minutes waiting).

Compressor Reverse Rotation Protection Control

- If the compressor is operating continuously for 5 minutes or longer and temperature difference between intake air and indoor heat exchanger is 5°C or less for 2 minutes, compressor will stop and restart automatically.
(Time Delay Safety Control is valid).

▲ T = Indoor heat exchanger temperature - intake air temperature. / This is to protect reverse rotation of the compressor when there is a instantaneous power failure.

4-way Valve Control

- 4-way valve always ON during Heating operation. (Except Deicing operation)

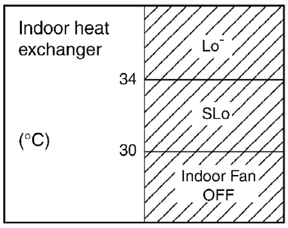
- When the unit is switched to “OFF” during Heating operation, 4-way valve stay at Heating position for 5 minutes.

Outdoor Fan Motor Control

- When compressor stops (reaches room temperature), outdoor fan will operate for 30 seconds.
  (30 seconds Forced Operation).

Hot Start Control

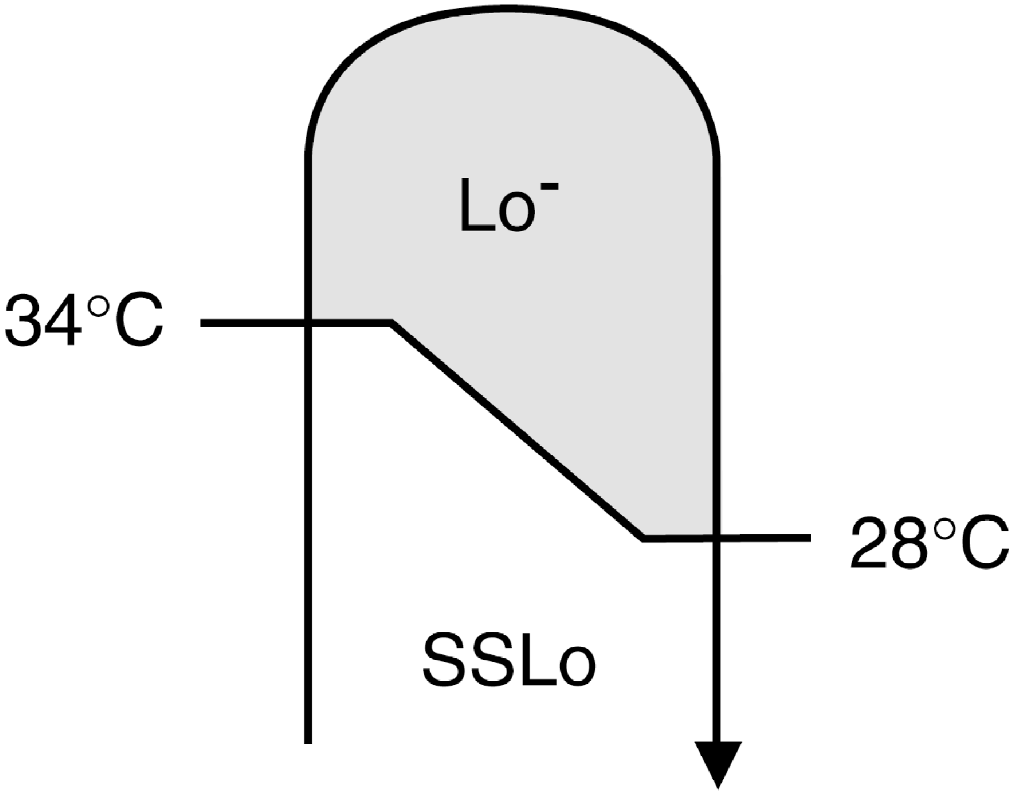
When Heating operation starts, Indoor Fan will not start until the indoor heat exchanger reaches 30°C as diagram shown.



Hot Start is completed when indoor heat exchanger reaches 39°C.

Anti Cold Draft Control

- This operation is to prevent the Cold Draft during Heating mode operation.
- The operation will start when compressor OFF (Thermo OFF) during Heating operation.
- For the first 30 sec from compressor OFF (Thermo OFF), Indoor fan speed will operate accordingly to the Indoor heat exchanger temperature as shown below:



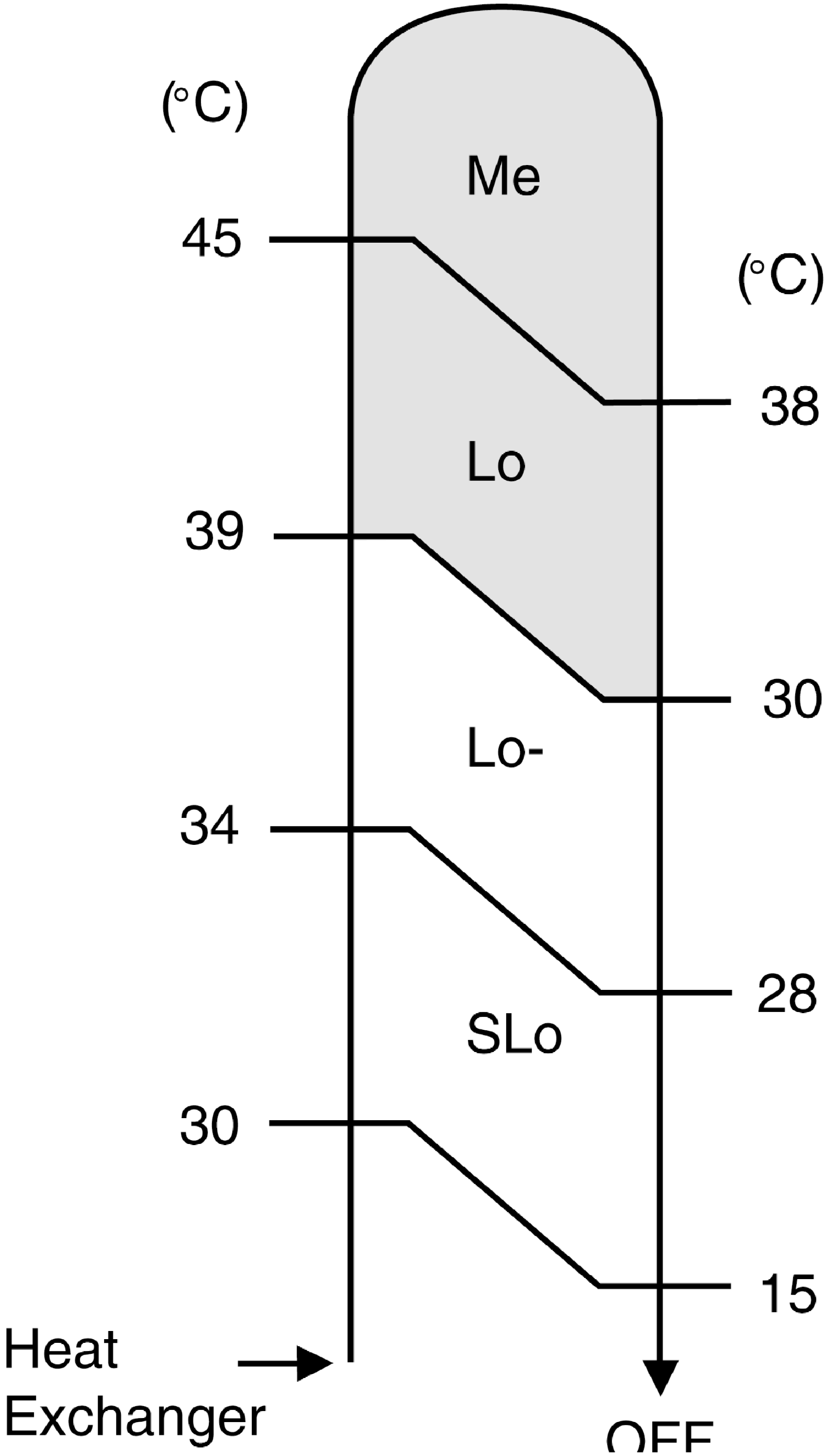
Note: SSLo: Fan will be running at Lo speed with Indoor heat exchanger temperature 1.5 sec ON and 5.5 sec OFF.

- **After 30 sec. from compressor OFF (thermo OFF), Indoor fan will run at SSLo speed only.**
- **Anti Cold Draft Control will stop when:**
- **Intake temperature < set temperature -1.5°C. (Time Delay Safety Control 4 minutes waiting is valid)**
- **After 30 minutes time saved control. (see page 22).**

Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during heating operation.

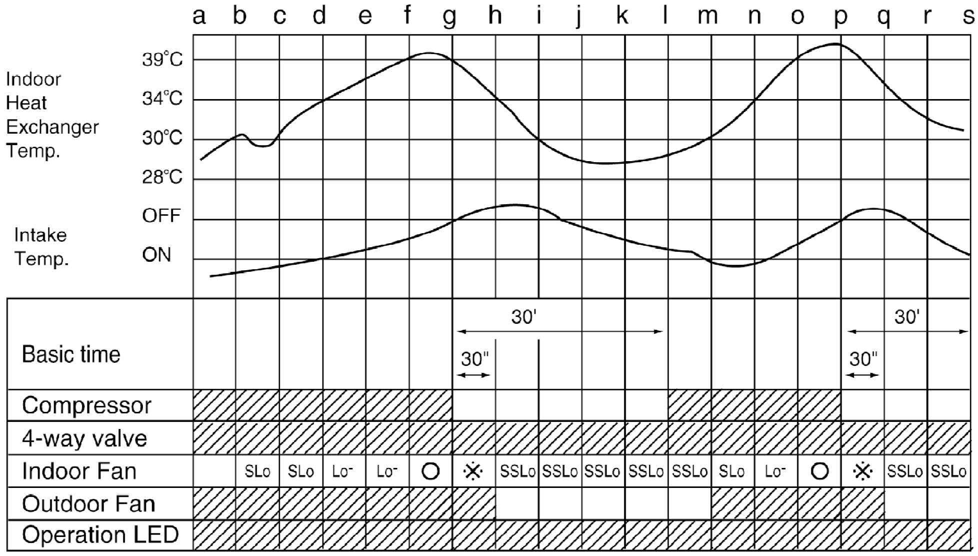
- **Fan speed rotates in the range of Me → SLo according to the heat exchanger temperature.**


(°C)
Me
45
(°C)
38
Lo
39
30
Lo-
34
28
SLo
30
15
Heat Exchanger
OFF

Temperature

- If use Manual Fan Speed, at above diagram will operate with setting Fan Speed.

Heating Operating Time Diagram


a b c d e f g h i j k l m n o p q r s
Indoor Heat Exchanger Temp.
39°C
34°C
30°C
28°C
Intake Temp.
OFF
ON
Basic time
30'
30"
Compressor
4-way valve
Indoor Fan
SLo SLo Lo- Lo- ○ ※ SSLo SSLo SSLo SSLo SSLo SLo Lo- ○ ※ SSLo SSLo
Outdoor Fan
Operation LED

<Description of operation>

a – b : Hot start (Indoor fan = OFF)

b – d : Hot start (Indoor fan = SLo)

g – m : Indoor fan control (anti cold draft control during thermostat OFF)

g – h : Outdoor fan control (30 sec. Forced Operation) after compressor stops.

● : Blinking

※ : Fan Speed will follow indoor heat exchanger temperature

Deicing Control

Deice starts to prevent frosting at outdoor heat exchanger.

- Normal Deicing

  Deice operations detection commences after 30 minutes of Heating operation starts or 60 minutes after previous deice operation. If the TRS (Thermal Reed Switch) senses the outdoor piping temperature drops to -3°C (TRS CLOSE) or less for 50 sec. continuously during compressor is in operation, deice will start.

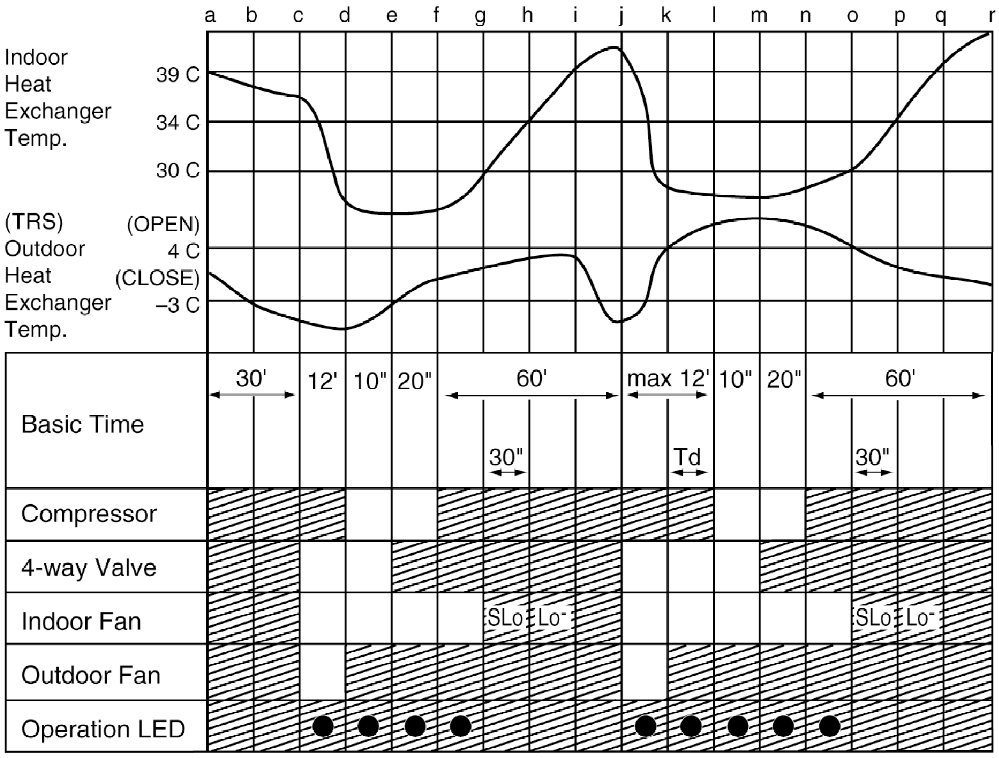
(There is no detection during Outdoor Fan stops.)

- Overload Deicing
  During heating operation, if the outdoor Fan OFF duration (due to overload control) is accumulated up to 60 minutes and after compressor starts for 1 minutes, deicing starts.
- Deicing ends when
  1. 12 minutes after deicing operation starts;
  2. TRS senses the outdoor piping temperature rises to 4°C (TRS OPEN).
  3. Deicing will not end immediately as time delay (Td) is valid as shown below.

Time taken from deicing starts to TRS OPEN (T)	Td (seconds)
$T < 3$ minutes	0
3 minutes $\leq T <$ 6 minutes	60
6 minutes $\leq T <$ 9 minutes	120
$T \geq 9$ minutes	180

- Once deicing operation starts, it will not end for 60 seconds.
- After deicing operation, compressor stops for 30 seconds and 4-way valve stays at cooling position for 10 seconds.

Normal Deicing Time Diagram

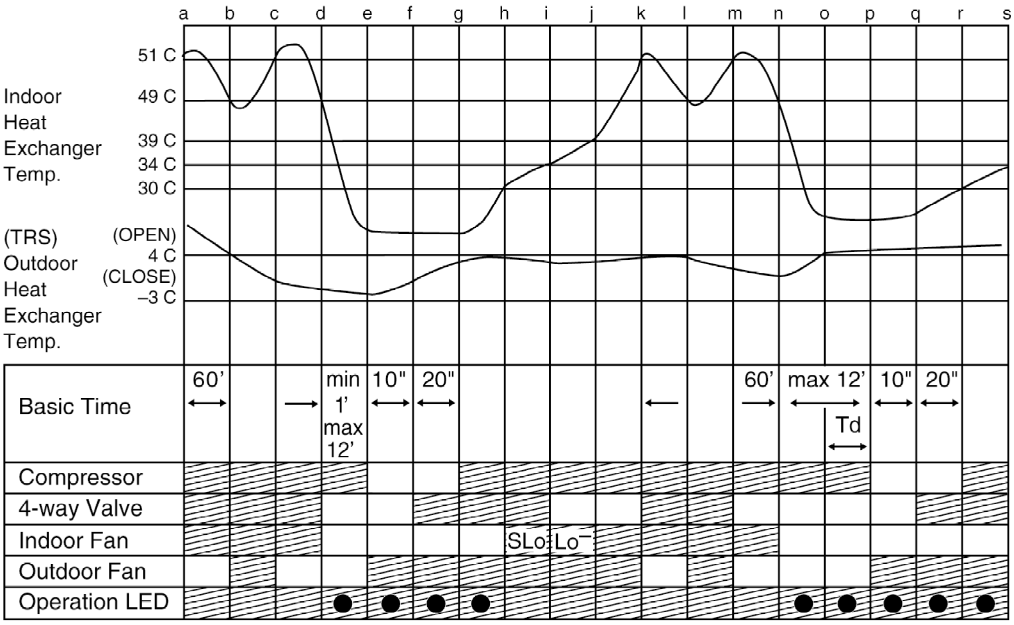

a b c d e f g h i j k l m n o p q r
Indoor Heat Exchanger Temp.
39 C
34 C
30 C
(TRS) Outdoor Heat Exchanger Temp.
(OPEN) 4 C
(CLOSE) -3 C
Basic Time
30'
12'
10"
20"
60'
30"
max 12'
Td
10"
20"
60'
30"
Compressor
4-way Valve
Indoor Fan
SLo
Lo
SLo
Lo
Outdoor Fan
Operation LED

<Description of operation>

a – c : Deicing operation judging condition established
c – d : Deicing operation (timer detected)
d – e, l – m : Time delay for 4-way valve
e – f, m – n : Hot start (no thermo OFF)
g – h, o – p : Not thermo OFF (after finished hot start)
j – l : Deicing operation (TRS detected)

● : Blinking
▨ Operation
☐ Stop

Overload Deicing Time Diagram



<Description of operation>

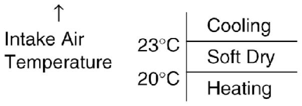
a – d, k – h : Overload Control
d – g : Overload Deicing (timer detected)
g – h : Hot start (indoor fan OFF)
h – i : Hot start (indoor fan SLo)
n – p : Overload Control (TRS detected)

● : Blinking
▨ Operation
☐ Stop

8.4. Automatic Mode Operation

1. When the Automatic Mode Operation is selected, the indoor fan operates at Lo-- fan speed for 20 second to sense intake air temperature and determine the 1st operation mode.

Standard for Determining Operation Mode
1st Judgement



※ Automatic Set Temperature
Refer 3. as below.

2. Operation mode will be determine again after 1 hour of operation, if the room temperature reaches to set temperature and compressor off time is over 7 minutes 30 seconds continuously.

※The present operation mode will be continued, if the room temperature does not reach to set temperature (Compressor keeps running) eventhough after 1 hour from automatic operation mode started.

Standard for Determining Operation Mode
2st Judgement onwards

Present	Judgement	Next Mode		
Mode		Cooling	Soft Dry	Heating
Cooling	23°C Cooling Heating	O (Judgement: 23°C & Above)	Not Applicable	O (Judgement Below 23°C
Soft Dry	20°C Soft Dry Heating	Not Applicable	O (Judgement: 20°C & Above)	O (Judgement Below 20°C
Heating	Cooling 25°C Heating	O (Judgement: Above 25°C)	Not Applicable	O (Judgement 25°C & belo

※Automatic Set Temperature

Refer 3. as below.

3. Automatic Set Temperature

For each operation, set temperature will automatically set as shown below.

However it can be selected 2°C higher or 2°C lower from standard set temperature by pressing the “Room Temperature Setting button”.

Operation Mode	▲Hi AUTO	AUTO	AUTO Hi ▼Lo
	(+2°C)	(±0°C)	(-2°C)
Cooling	27°C	25°C	23°C
Soft Dry	24°C	22°C	20°C
Heating	23°C	21°C	19°C

8.5. Sleep Mode Auto Operation

Cooling or Soft Dry Operation

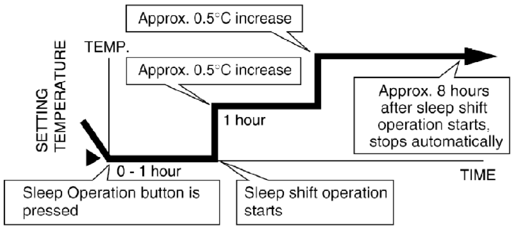
When you press the SLEEP Mode, the following movement will start to avoid overcooling.

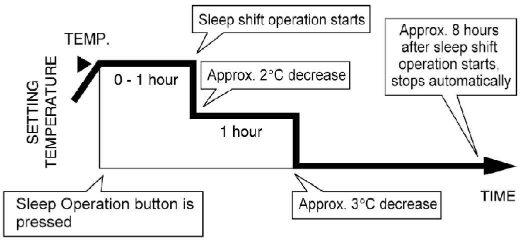
- **The fan speed refer to Indoor Fan Motor Control.**
- **The setting temperature will be risen by 0.5°C at the start of operation and by 0.5°C one hour later.**
- **The operation will stop after 8 hours.**
- **When using together with the Timer, the ON-Timer has priority.**

Heating Operation

When you press the SLEEP Mode, the following movement will start to avoid overheating.

- **The fan speed refer to Indoor Fan Motor Control.**
- **The setting temperature will be decrease by 2°C at the start of operation and by 3°C one hour later.**
- **The operation will stop after 8 hours.**
- **When using together with the Timer, the ON-Timer has priority.**


Approx. 0.5°C increase
TEMP.
SETTING TEMPERATURE
Approx. 0.5°C increase
1 hour
Approx. 8 hours after sleep shift operation starts, stops automatically
0 - 1 hour
TIME
Sleep Operation button is pressed
Sleep shift operation starts


Sleep shift operation starts
TEMP.
Approx. 8 hours after sleep shift operation starts, stops automatically
SETTING TEMPERATURE
0 - 1 hour
Approx. 2°C decrease
1 hour
Sleep Operation button is pressed
Approx. 3°C decrease
TIME

8.6. Random Auto Restart Control

- **If there is a power failure, operation will be automatically restarted after 3 to 51/2 minutes when the power is resumed. It will start with previous operation mode and airflow direction.**
- **Restart time is decided randomly using 4 parameter: Intake air temperature, setting temperature, fan speed and Air Swing Blade position.**
- **Random Auto Restart Control is not available when Timer or Sleep Mode is set.**

- This control can be omitted by open the circuit of JX1. (Refer Circuit Diagram)

8.7. Delay ON Timer Control

- When the Delayed ON Timer is set by using the remote control, the unit will start operate slightly before the set time, so that the room will reach nearly to the set temperature by the desired time.
- For Cooling and Soft Dry mode, the operation will start 15 minutes before the set time.
- For Heating mode, the operation will start 30 minutes before the set time.
- For Automatic mode, the indoor fan will operate at Lo-- speed for 20 seconds, 30 minutes before the set time to detect the intake air temperature to determine the operation mode. The operation indication lamp will blink at this time.

8.8. Remote Control Signal Receiving Sound

- Peep sound (Long) will be heard when:-
- Stopping the Air Conditioner using ON/OFF switch.
- Stopping the Sleep Mode.
- Stopping the Powerful Mode.
- Stopping the Economy Mode.
- Pep sound (Short) will be heard for others.
- To switch off the peep sound, press the “Auto Operation Button” continuously for 10 seconds or more.

  Repeat the above if you want to switch ON the beep sound or switch OFF the power switch at the indoor unit and switch it ON again. /

  ※However, if the “Auto Operation Button” have been pressed the Automatic cooling operation will be activated.

  If you do not require this operation, you may change it by using the remote control.

8.9. Indoor Fan Speed Control

Auto Fan Speed Control

When set to Auto Fan Speed, the fan speed is shifted automatically between Stop to SHi depend on each operation as shown below.

Manual Fan Speed Control

Basic fan speed adjustment (3 settings, from Lo to Hi) can be carried out by using the Fan Speed selection button at the remote control.

Tap				SHi	Hi	Me	Lo	RLo	LO--	SLo
COOLING	Normal	Manual	Hi		O					
			Me			O				
			Lo				O			
		Auto Fan Speed			O	O				
		Sleep Shift					O			
	Powerful	Manual		O						
		Auto Fan Speed		O						
		Sleep Shift					O			
	Economy	Manual						O		
		Auto Fan Speed						O		
		Sleep Shift					O			
SOFT DRY	Normal	Manual								O
	Powerful	Auto Fan Speed								O
	Economy	Sleep Shift					O			
HEATING (A73K)	Normal	Manual	Hi	O			O			O
			Me		O		O			O
			Lo			O	O			O
		Lo—					O			
		SLo								O
		Auto Fan Speed			O	O	O			O
		Sleep Shift					O			
	Powerful	Manual		O	O	O	O			O
		Auto Fan Speed			O	O	O			O
		Sleep Shift					O			
	Economy	Manual		O	O	O	O			O
		Auto Fan Speed			O	O	O			O
		Sleep Shift					O			
		Manual	Hi	O			O			O
			Me			O	O			O
HEATING (A93K & A123K)	Normal		Lo				O			O
		Lo—					O			
		SLo								O
		Auto Fan Speed				O	O			O
		Sleep Shift					O			
	Powerful	Manual		O		O	O			O
		Auto Fan Speed				O	O			O

		Sleep Shift				**O**				
	Economy	**Manual**	**O**		**O**	**O**			**O**	
		Auto Fan Speed			**O**	**O**			**O**	
		Sleep Shift				**O**				
MODE JUDGEMENT								**O**		

※ Lo^{--}: Indoor Fan rotates at 6 seconds ON and 4 seconds OFF.

※ SLo: Indoor Fan rotates at 4 second intervals at Low speed.

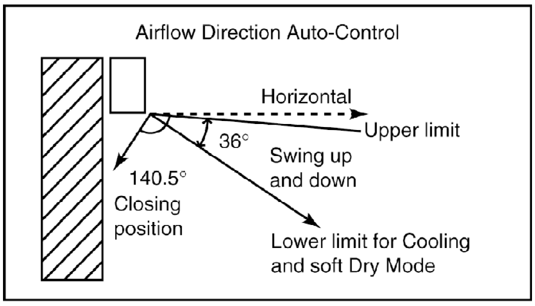
※ RLo: Random Low Speed.
Lo, RLo^{-}, RLo^{--}, Fan Speed is operates randomly.

Random Low Speed

Fan Speed	Lo	RLo^{-}				RLo^{--}			
Time	10"	4.5"	0.5"	4.5"	0.5"	4"	1"	4"	1"
Fan Motor	ON	ON	OFF	ON	OFF	ON	OFF	ON	OFF

8.10. Airflow Direction Control

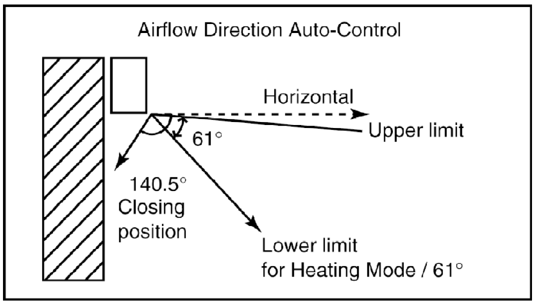
1. Vertical Airflow Direction
Cooling and Soft Dry Mode


Airflow Direction Auto-Control
Horizontal
Upper limit
36°
Swing up and down
140.5° Closing position
Lower limit for Cooling and soft Dry Mode

- The louver swings up and down as shown above.

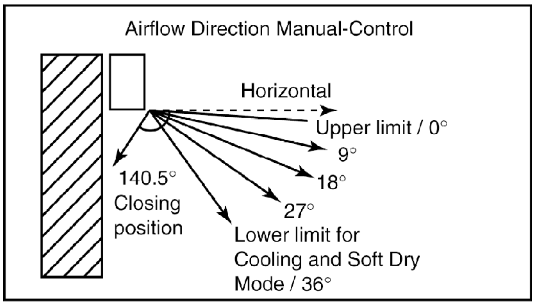
- The louver does not swing when the Indoor Fan stops during operation.

2. Vertical Airflow Direction
Heating Mode

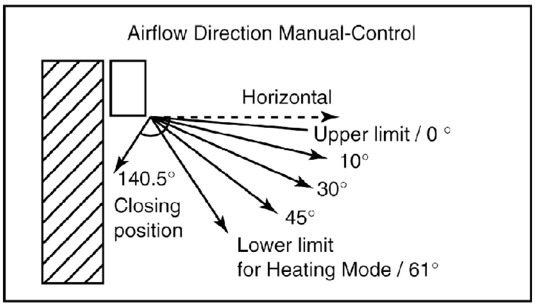

Airflow Direction Auto-Control
Horizontal
Upper limit
61°
140.5° Closing position
Lower limit for Heating Mode / 61°

- When the intake air temp. reaches 38°C, the louver is changed

from upper to lower limit. When the intake air temp falls to 35°C, the louver is changed from lower to upper limit.


Airflow Direction Manual-Control
Horizontal
Upper limit / 0°
9°
18°
27°
Lower limit for Cooling and Soft Dry Mode / 36°
140.5° Closing position

- **The louver can be selected between 0° - 36° (as shown above) when pressing Manual Airflow Direction Selection Button.**


Airflow Direction Manual-Control
Horizontal
Upper limit / 0 °
10°
30°
45°
Lower limit for Heating Mode / 61°
140.5° Closing position

- **The louver can be selected between 0° - 61° (as shown above) when pressing Manual airflow Direction Selection Button.**

3. Horizontal Airflow Direction

- **The left and right airflow direction louvers can be adjusted manually.**

8.11. Economy Mode Operation

Purpose of this operation is to save or reduced electrical power consumption of the room air conditioner.
However consumer is advised to use Economy Mode operation after the room temperature reaches the desired temperature.

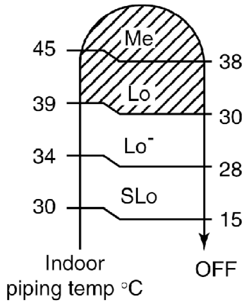
1. Cooling and Soft Dry Mode

- **When the Economy Mode is set, the set temperature will be automatically increased 0.5°C against the present setting temperature. This operation automatically will be running under Random Fan speed.**

- **Vertical Airflow Direction:-**
  In “Manual” or “Auto” setting, the vane will automatically change to Auto Air Swing.

2. Heating Mode

- **When the Economy Mode is set, the temperature will be automatically decreased 0.5°C against the present setting temperature.**
- **The Fan Speed will shift as shown below:**



- When the Auto Fan speed is selected, the fan speed will automatically change from Slo to Me depending to the Indoor piping temperature.
- When the manual Fan Speed is selected, the fan speed will automatically change from SLo to Lo¯, then follows set fan speed when the Indoor piping temperature reaches 39°C.

▨ Set Fan Speed

- **Vertical Airflow Direction:-**
  In “Manual” or “Auto” setting, the vane will automatically change to Auto Air Swing. /

3. Economy Mode will stop if:

- **Economy mode button is pressed again.**
- **Stopped by ON / OFF switch.**
- **Timer-off activates.**
- **Powerful mode button is pressed.**
- **Fan Speed control button is pressed.**
- **Sleep mode button is pressed ON.**
- **Operating mode is changed.**

8.12. Powerful Mode Operation

Purpose of this operation is to be obtain the setting temperature quickly.

1. Cooling and Soft Dry Mode

- **When the Powerful Mode is set, the set temperature will be automatically decreased 3°C against the present setting temperature. This operation automatically will be running** under Super High Fan speed.

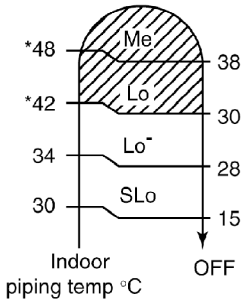
- Vertical Airflow Direction:-

  In “Manual” setting, the vane will automatically shift down 10°C lower than previous setting.

  In “Auto” setting, the vane will automatically swing up and down. However the upper and down. However the upper and lower limit will be shifted 10° downward.

2. Heating Mode

- When the Powerful Mode is set, the set temperature will be automatically increased 3°C against the present setting temperature.
- The Fan Speed will shift as shown below:



- When the Auto Fan speed is selected, the fan speed will automatically change from SLo to Me depending to the Indoor piping temperature.
- When the manual Fan Speed is selected, the fan speed will automatically change from SLo to Lo¯, then follows set fan speed when the Indoor piping temperature reaches 42°C.

▨ Set Fan Speed

- * Shows different temperature than normal heating. This higher temperature is to provide warmer air.

- Vertical Airflow Direction:-

  In “Manual” setting, the vane will automatically shift down 5°C lower than previous setting.

  In “Auto” setting, the vane will automatically shift between upper and lower limit depending on the intake air temperature as Heating Mode, Airflow Direction Auto-Control. However the upper and lower limit will be shifted 5°C downward.

3. Powerful mode will operate for 15 minutes only.

4. Powerful Mode will stop if:

- Power mode button is pressed again.
- Stopped by ON / OFF switch.
- Timer-off activates.
- Economy mode button is pressed.
- Sleep mode button is pressed.
- Operating mode is changed.

9. Operating Instructions

10. Installation Instructions

Required tools for Installation Works			
1. Phillips screw driver	5. Spanner	9. Gas leak detector	13.Multimeter
2. Level gauge	6. Pipe cutter	10.Measuring tape	14.Torque wrench 18 N.m (1.8 kgf.m) 42 N.m (4.2 kgf.m)
3. Electric drill, hole core drill (ø70 mm)	7. Reamer	11.Thermometer	15.Vacuum pump
4. Hexagonal wrench (4 mm)	8. Knife	12.Megameter	16.Gauge manifold

10.1. Safety Precautions

- Read this following “SAFETY PRECAUTIONS” carefully before installation.
- Electrical work must be installed by all licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below.
  Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indication.

⚠ WARNING	This indication shows the possibility of causing death or serious injury.

⚠ CAUTION	This indication shows the possibility of causing injury or damage to properties on

The items to be followed are classified by the symbols:

⃠	Symbol with background white denotes item that is PROHBITED from piping.

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instruction. Please remind the customer to keep the operating instructions for future reference.

⚠ WARNING

1. **Engage dealer or specialist for installation. If installation done by the user is defective, it will c water leakage, electrical shock or fire.**
2. **Install according to this installation instruction strictly. If installation is defective, it will cause leakage, electrical shock or fire.**
3. **Use the attached accessories parts and specified parts for installation. Otherwise, it will cause to fall, water leakage, fire or electrical shock.**
4. **Install at a strong and firm location which is able to withstand the set's weight. If the strength i enough or installation is not properly done, the set will drop and cause injury.**
5. **For electrical work, follow the local national wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity enough or defect found in electrical work, it will cause electrical shock or fire.**
6. **Use the specified cable (1.5 mm^2) and connect tightly for indoor/outdoor connection. Connect and clamp the cable so that no external force will be acted on the terminal. If connection or fixi not perfect, it will cause heat-up or fire at the connection.**
7. **Wire routing must be properly arranged so that control board cover is fixed properly. If control cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electric**
8. **When carrying out piping connection, take care not to let air or other substances other than th specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnorm pressure in the refrigerant cycle, explosion and injury.**
9. **Do not damage or use unspecified power supply cord. Otherwise, it will cause fire or electrical shock.**
10. **Do not modify the length of the power supply cord or use of the extension cord, and do not share the single outlet with other electrical appliances. Otherwise, it will cause fire or electrical shock.**

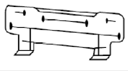
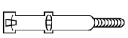
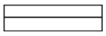
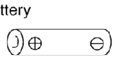
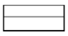
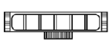
⚠ CAUTION

1. Grounding is necessary. It may cause electrical shock if grounding is not perfect.
2. Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.
3. Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, v may enter the room and damage the furniture.

ATTENTION

1. Selection of the installation location.
   Select a installation location which is rigid and strong enough to support or hold the unit, and location for easy maintenance.
2. Power supply connection to the room air conditioner.
   Connect the power supply cord of the room air conditioner to the mains using one of the follo method.
   Power supply point shall be the place where there is ease for access for the power disconnect case of emergency.In some countries, permanent connection of this room air conditioner to th supply is prohibited.
   1. Power supply connection to the receptacle using a power plug. Use an approved 16A power plug with earth pin for the connection receptacle.
   2. Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker for the permanen It must be a double pole switch with a minimum 3 mm contact gap.
3. Do not release refrigerant.
   Do not release refrigerant during piping work for installation, re-installation and during repairi refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
4. Installation work.
   It may need two people to carry out the installation work.
5. Do not install this appliance in a laundry room or other location where water may drip from the etc.

Attached accessories

No.	Accesories part	Qty.	No.	Accessories part	Qty.
1	Installation plate 	1	6	Drain elbow	1
2	Installation plate fixing screw	6	7	Band 	2
3	Remote control	1	8	Vinyl tape 	1
4	Battery 	2	9	Vinyl tape 	3
5	Air purifying filter 	2			

Accessories: Flaring piping kit
CZ-3F5, 7AEN

SELECT THE BEST LOCATION

INDOOR UNIT

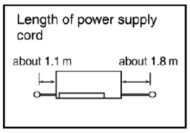
- There should not be any heat source or steam near the unit.
- There should not be any obstacles blocking the air circulation.
- A place where air circulation in the room is good.
- A place where drainage can be easily done.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the door way.
- Ensure the spaces indicated by arrows from the wall, ceiling, or other obstacles.
- Indoor unit of this room air conditioner shall be installed on the wall in a height of at least 2.3 m.

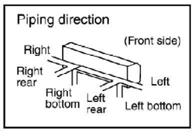
OUTDOOR UNIT

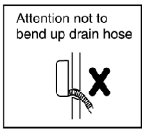
- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.
- Do not place any obstacles which may cause a short circuit of the discharged air.
- If piping length is over the common length, additional refrigerant should be added as shown in the table.

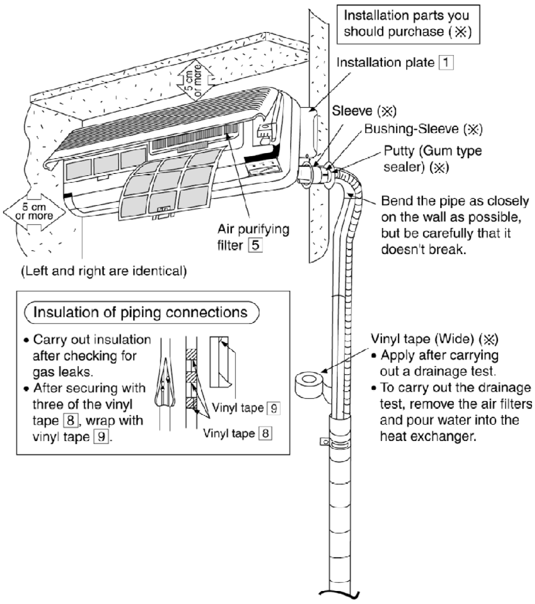
Model	Piping size		Common Length	Max. Elevation (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)
	Gas	Liquid				
A73KR/A93KR	3/8”	1/4”	7.5	5	10	20
A123KR	1/2”	1/4”	7.5	5	15	20

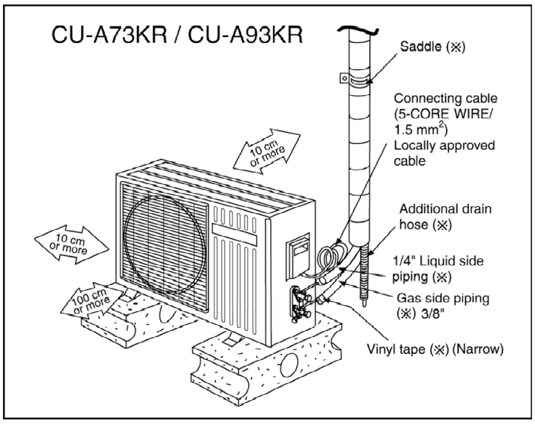
Indoor/Outdoor unit installation diagram

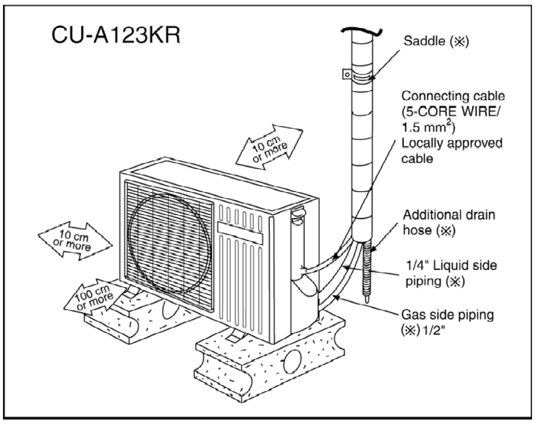

Length of power supply cord
about 1.1 m
about 1.8 m


Piping direction
(Front side)
Right
Right rear
Right bottom
Left rear
Left
Left bottom


Attention not to bend up drain hose


Installation parts you should purchase (※)
Installation plate 1
5 cm or more
Sleeve (※)
Bushing-Sleeve (※)
Putty (Gum type sealer) (※)
Bend the pipe as closely on the wall as possible, but be carefully that it doesn't break.
5 cm or more
Air purifying filter 5
(Left and right are identical)
Insulation of piping connections
• Carry out insulation after checking for gas leaks.
• After securing with three of the vinyl tape 8, wrap with vinyl tape 9.
Vinyl tape 9
Vinyl tape 8
Vinyl tape (Wide) (※)
• Apply after carrying out a drainage test.
• To carry out the drainage test, remove the air filters and pour water into the heat exchanger.


CU-A73KR / CU-A93KR
Saddle (※)
Connecting cable (5-CORE WIRE/ 1.5 mm²) Locally approved cable
10 cm or more
10 cm or more
100 cm or more
Additional drain hose (※)
1/4" Liquid side piping (※)
Gas side piping (※) 3/8"
Vinyl tape (※) (Narrow)


CU-A123KR
Saddle (※)
Connecting cable (5-CORE WIRE/ 1.5 mm²) Locally approved cable
10 cm or more
10 cm or more
100 cm or more
Additional drain hose (※)
1/4" Liquid side piping (※)
Gas side piping (※) 1/2"

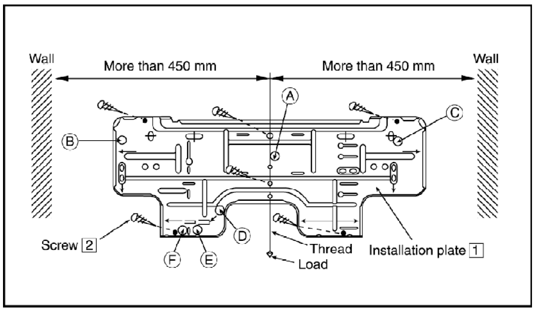
- This illustration is for explanation purposes only. / The indoor unit will actually face a different way.

10.2. INDOOR UNIT

10.2.1. SELECT THE BEST LOCATION / (Refer to “Select the best location” section)

10.2.2. HOW TO FIX INSTALLATION PLATE

The mounting wall is strong and solid enough to prevent it from the vibration.



Ⓐ: Unit centre point should be at more than 450 mm at right and left of the wall.

/ The height should be more than 195 mm from the ceiling.

Ⓑ: From installation plate end to unit’s left side end is 50 mm.

Ⓒ: From installation plate end to unit’s right end is 50 mm.

Ⓓ: Connecting cable should be about 750 mm from this line. (Only for left rear piping)

Ⓔ: For left side piping, piping connection for liquid should be here.

Ⓕ: For left side piping, piping connection for gas should be here.

1. **Mount the installation plate on the wall with 6 screws. / (If mounting the unit on the concrete wall. Consider using anchor bolts.)**

   - Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.

2. **Drill the piping plate hole with ø70 mm hole-core drill.**

   - Line according to the arrows marked on the lower left and right side of the installation plate. The meeting point of the

extended line is the centre of the hole.

- Drill the piping hole at either the right or the left and the hole should be slightly slanted to the outdoor side.

10.2.3. TO DRILL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPING

1. Insert the piping sleeve to the hole.

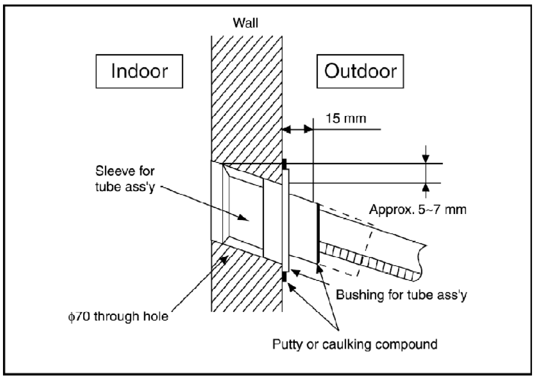
2. Fix the bushing to the sleeve.

3. Cut the sleeve until it extrudes about 15 mm from the wall.

CAUTION

When the wall is hollow, please be sure to use the sleeve for tube ass'y, to prevent dangers caused by mice biting the connecting cable.

4. Finish by sealing the sleeve with putty or caulking compound at the final stage.


Wall
Indoor
Outdoor
15 mm
Sleeve for tube ass'y
Approx. 5~7 mm
Bushing for tube ass'y
ϕ70 through hole
Putty or caulking compound

10.2.4. INDOOR UNIT INSTALLATION

1. For the right rear piping

Pull out the Indoor piping

⬇

Install the Indoor Unit

⬇

Secure the Indoor Unit

⬇

Insert the connecting cable

2. For the right and right bottom piping

Pull out the Indoor piping

⬇

Install the Indoor Unit

⬇

Insert the connecting cable

⬇

Secure the Indoor Unit

3. For the embedded piping

Replace the drain hose

⬇

Bend the embedded piping

⬇

- Use a spring bender or equivalent to bend the piping so that the piping is not crushed.

Install the Indoor Unit

⬇

Cut and flare teh embedded piping

⬇

- When determing the dimension of the piping, slide the unit all the way to the left on the installation plate.
  Refer to the section "Cutting and flaring the piping".

Pull the connecting cable into Indoor Unit

⬇

- The inside and outside connecting cable can be connected without removing the front grille.

Connect the piping

⬇

- Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)

Insulate and finish the piping

⬇

- Please refer to "Piping and finishing" column of outdoor section and "Insulation of piping connections" column as mentioned in Indoor/ Outdoor Unit Installation.

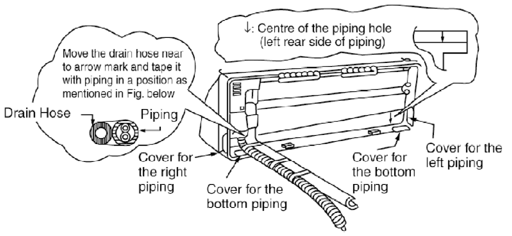
Install clamping cover of piping

⬇

- Refer to figure on next page.

Secure the Indoor Unit

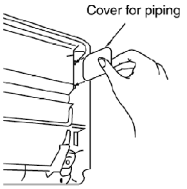
Pull out the piping and drain hose


↓: Centre of the piping hole
(left rear side of piping)
Move the drain hose near to arrow mark and tape it with piping in a position as mentioned in Fig. below
Drain Hose
Piping
Cover for the right piping
Cover for the bottom piping
Cover for the bottom piping
Cover for the left piping

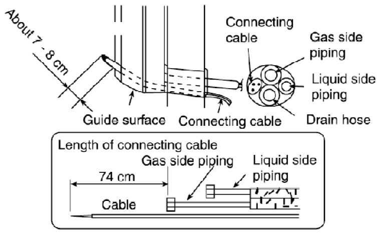
How to keep the cover

In case of the cover is cut, keep the cover at the rear of chassis as shown in the illustration for future reinstallation.

(Left, right and 2 bottom covers for piping)

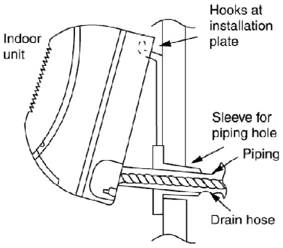

Cover for piping

Insert the connecting cable


About 7~8 cm
Connecting cable
Gas side piping
Liquid side piping
Drain hose
Guide surface
Connecting cable
Length of connecting cable
Gas side piping
Liquid side piping
74 cm
Cable

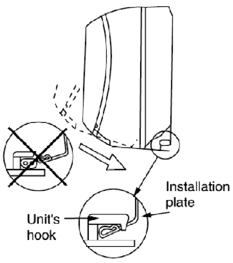
Install the indoor unit

Hook the indoor unit onto the upper portion of installation plate(Engage the indoor unit with the upper edge of the installation plate).Ensure the hooks are properly seated on the installation plateby moving in left and right.

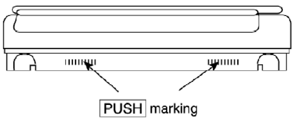

Indoor unit
Hooks at installation plate
Sleeve for piping hole
Piping
Drain hose

Secure the indoor unit

1. Tape the extra power supply cord in a bundle and keep it behind the chassis.
   - Ensure that the power supply cord is not clamped in between the unit's hook (2 positions) and installation plate.
2. Press the lower left and right side of the unit against the installation plate until hooks engages with their slots (sound click).


Installation plate
Unit's hook

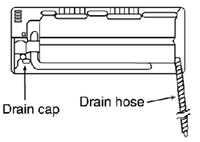
To take out the unit, push the PUSH marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.

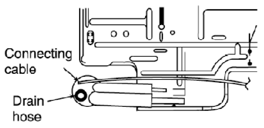

PUSH marking

(This can be used for left rear piping and left bottom piping also.)

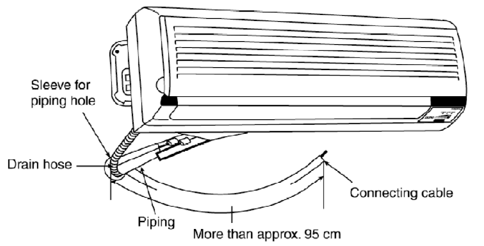
Exchange the drain hose and the cap

Refer view for left piping installation

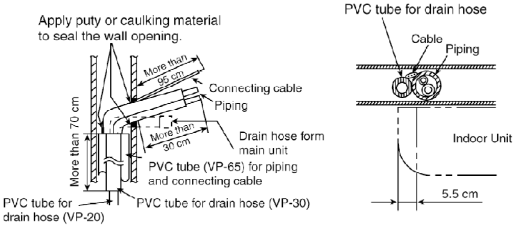

Drain cap
Drain hose


Connecting cable
Drain hose

Adjust the piping slightly downwards


Sleeve for piping hole
Drain hose
Piping
More than approx. 95 cm
Connecting cable

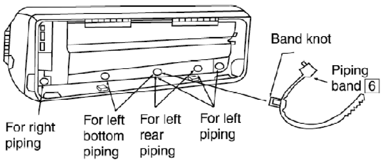
- How to pull the piping and drain hose out, in case of the embedded piping.


Apply putty or caulking material to seal the wall opening.
PVC tube for drain hose
Cable
Piping
More than 95 cm
Connecting cable
Piping
More than 30 cm
Drain hose form main unit
More than 70 cm
PVC tube (VP-65) for piping and connecting cable
Indoor Unit
5.5 cm
PVC tube for drain hose (VP-20)
PVC tube for drain hose (VP-30)

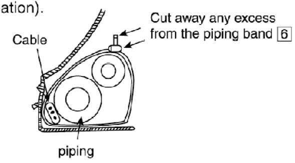
Be sure to insulate the PVC tube for drain hose

ATTACHMENT OF THE PIPING BAND

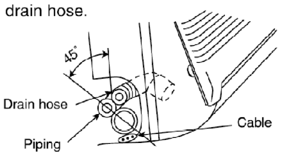
- For the right rear piping, it is not necessary to use piping band. The piping band can be attached when the extension flare pipe is used or when doing the piping work (under condition as shown in the diagram below) on the floor.
- The location to attach the piping band change according to the direction of the piping. Press the band knot to the hole in order to fix the band as shown in diagram below.


Band knot
Piping band 6
For right piping
For left bottom piping
For left rear piping
For left piping

- Tighten the band so that the cable and the piping are secure. Be sure to cut any excess from the piping band (failure to cut away the excess piping band may produce abnormal noise during operation of condensation).


Cable
Cut away any excess from the piping band 6
piping

- In case of left piping how to insert the connecting cable and drain hose.

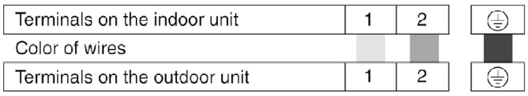

45°
Drain hose
Piping
Cable

(For the right piping, follow the same procedure)

10.2.5. CONNECT THE CABLE TO THE INDOOR UNIT

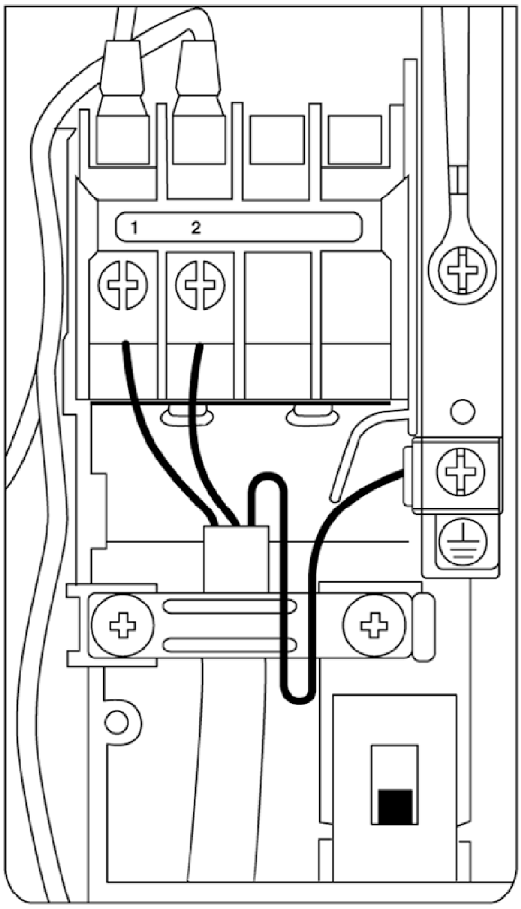
1. **The inside and outside connecting cable can be connected without removing the front grille.**
2. **Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 × 1.5 mm^2 flexible cord, type designation H05 RN-F or heavier cord.**

- Ensure the color of wires of outdoor unit and the terminal Nos. are the same to the Indoor’s respectively.
- Earth lead wire shall be longer than the other lead wires as shown in the figure for the electrical safety in case of the slipping out of the cord from the anchorage. /



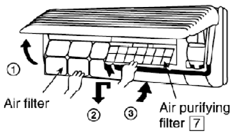
Terminals on the indoor unit	1	2	⏚
Color of wires	░	▒	█
Terminals on the outdoor unit	1	2	⏚

- Secure the cable onto the control board with the holder (clamper).



INSTALLALTION OF AIR PURIFYING FILTERS

1. Open the front panel.
2. Remove the air filters.
3. Hold the purifying filters by their tabs and install as shown in the illustration at right.

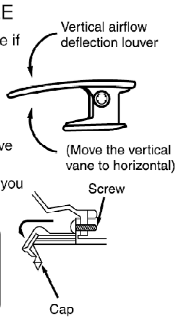


HOW TO TAKE OUT FRONT GRILLE

Please follow steps below to take out front grille if necessary such as when servicing.

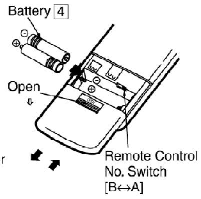
1. Set the vertical airflow direction louver to the horizontal position.
2. Slide down the two caps on the front grille as shown in the illustration at right, and then remove the two mounting screws.
3. Pull the lower section of the front grille towards you to remove the front grille.

When reinstalling the front grille, first set the vertical airflow direction louver to the horizontal position and then carry out above steps 2 - 3 in the reverse order.


Vertical airflow deflection louver
(Move the vertical vane to horizontal)
Screw
Cap

REMOTE CONTROL NO. SWITCH

- When installing two air conditioners in one room, each air conditioner can be synchorized to the remote controller.
- In order to operate separately, open the rear cover of one of the remote controller and set the switch to "B".
- Also, set the remote control No. switch to "B" in the corresponding indoor unit. (The switch is located in the control box-sub. of the indoor unit.)



10.3. OUTDOOR UNIT

10.3.1. SELECT THE BEST LOCATION / (Refer to “Select the best location” section)

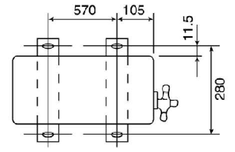
10.3.2. INSTALL THE OUTDOOR UNIT

- After selecting the best location, start installation according to Indoor/outdoor Unit Installation Diagram.

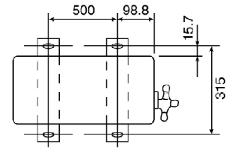
1. Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut. (10 mm).

2. When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt or nails.

CU-A73KR / CU-A93KR



CU-A123KR



10.3.3. CONNECTING THE PIPING

Connecting the Piping to Indoor Unit

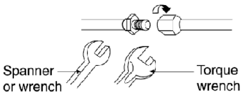
Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe. (In case of using piping)

Connect the piping

- Align the center of piping and sufficiently tighten the flare nut with fingers.

- Further tighten the flare nut with torque wrench in specified torque

as stated in the table.


Spanner or wrench
Torque wrench

Model	Piping size (Torque)	
	Gas	Liquid
A73KR/A93KR	3/8" (42 N.m)	1/4" (18 N.m)
A123KR	1/2" (55 N.m)	1/4" (18 N.m)

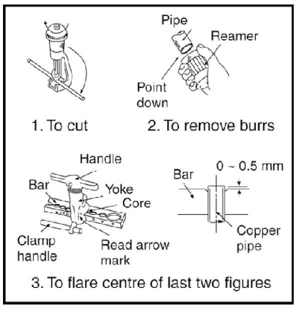
Connecting the Piping to Outdoor Unit

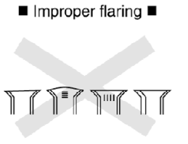
Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge. Make flare after inserting the flare nut (located at valves) onto the copper pipe.

Align center of piping to valves and then tighten with torque wrench to the specified torque as stated in the table.

CUTTING AND FLARING THE PIPING

1. **Please cut using pipe cutter and then remove the burrs.**
2. **Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused.**
   Turn the piping and down to avoid the metal powder entering the pipe.
3. **Please make flare after inserting the flare nut onto the copper pipes.**

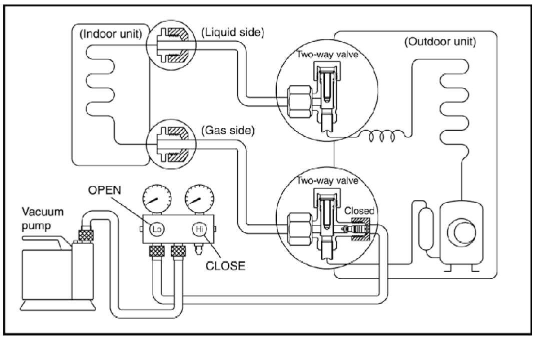

Pipe
Reamer
Point down
1. To cut
2. To remove burrs
Handle
Bar
Yoke
Core
Clamp handle
Read arrow mark
Bar
0 ~ 0.5 mm
Copper pipe
3. To flare centre of last two figures


■ Improper flaring ■

When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connectors, carefully check the flare brush.

10.3.4. EVACUATION OF THE EQUIPMENT

WHEN INSTALLING AND AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.


(Indoor unit)
(Liquid side)
(Outdoor unit)
Two-way valve
(Gas side)
Two-way valve
Closed
OPEN
Vacuum pump
Lo
Hi
CLOSE

1. **Connect a charging hose with a push pin to the Low and High side of a charging set and the service port of the 3-way valve.**

- Be sure to connect the end of the charging hose with the push pin to the service port.

2. Connect the center hose of the charging set to a vacuum pump.
3. Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air approximately ten minutes.
4. Close the valve of both the Low and High sides of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.
   Note: BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.
5. Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.
6. Tighten the service port caps of the 3-way valve at torque of 18 N.m with a torque wrench.
7. Remove the valve caps of both of the 2-way valve and 3-way valve. Position both of the valves to “OPEN” using a hexagonal wrench (4 mm).
8. Mount valve caps onto the 2-way valve and the 3-way valve.

- Be sure to check for gas leakage.

⚠ CAUTION

- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in step 3 above take the following measure:
- If the leak stops when the piping connections are tightened further, continue working from step 3.
- If the leak does not stop when the connections are retightened, repair the location of leak.
- Do not release refrigerant during piping work for installation and re-installation. Take care of the liquid refrigerant, it may cause frostbite.

10.3.5. CONNECT THE CABLE TO THE OUTDOOR UNIT

1. Remove the control board cover from the unit by loosening the screw.

2. **Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 × 1.5 mm^2 flexible cord, type designation H05 RN-F or heavier cord.**

Terminals on the indoor unit	1	2	⏚
Color of wires	░	▒	█
Terminals on the outdoor unit	1	2	⏚

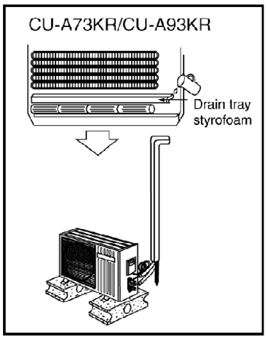
3. **Secure the cable onto the control board with the holder (clamper).**
4. **Attach the control board cover back to the original position with the screw.**

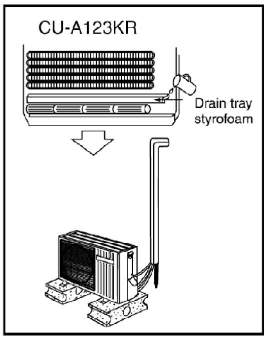
10.3.6. PIPE INSULATION

1. **Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.**
2. **If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.**

CHECK THE DRAINAGE

- Open front panel and remove air filters. / (Drainage checking can be carried out without removing the front grille.)
- Pour a glass of water into the drain tray-styrofoam.
- Ensure that water flows out from drain hose of the indoor unit.


CU-A73KR/CU-A93KR

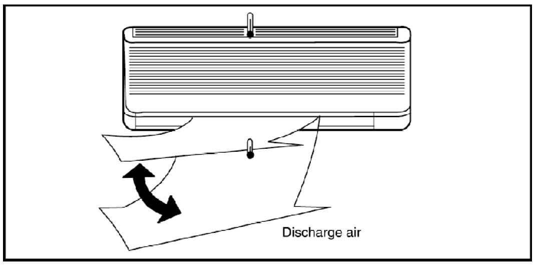

CU-A123KR

EVALUATION OF THE PERFORMANCE

- Operate the unit at cooling operation mode for fifteen minutes or more.

- Measure the temperature of the intake and discharge air.

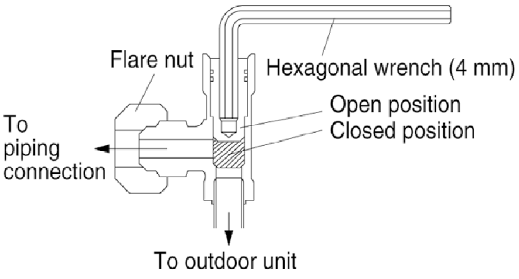
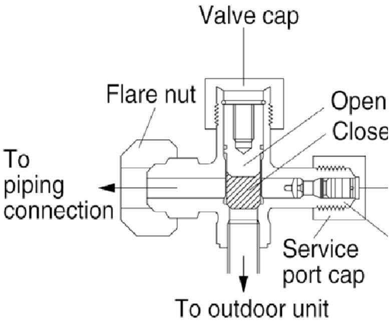
- Ensure the difference between the intake temperature and the discharge is more than 8°C.



CHECK ITEMS

- ☐ **Is there any gas leakage at flare nut connections?**
- ☐ **Has the heat insulation been carried out at flare nut / connection?**
- ☐ **Is the connecting cable being fixed to terminal board / firmly?**
- ☐ **Is the connecting cable being clamped firmly?**
- ☐ **Is the drainage OK? (Refer to “Check the drainage” / section)**
- ☐ **Is the earth wire connection properly done?**
- ☐ **Is the indoor unit properly hooked to the installation plate?**
- ☐ **Is the power supply voltage complied with rated value?**
- ☐ **Is there any abnormal sound?**
- ☐ **Is the cooling operation normal?**
- ☐ **Is the thermostat operation normal?**
- ☐ **Is the remote control’s LCD operation normal?**
- ☐ **Is the air purifying filter installed?**

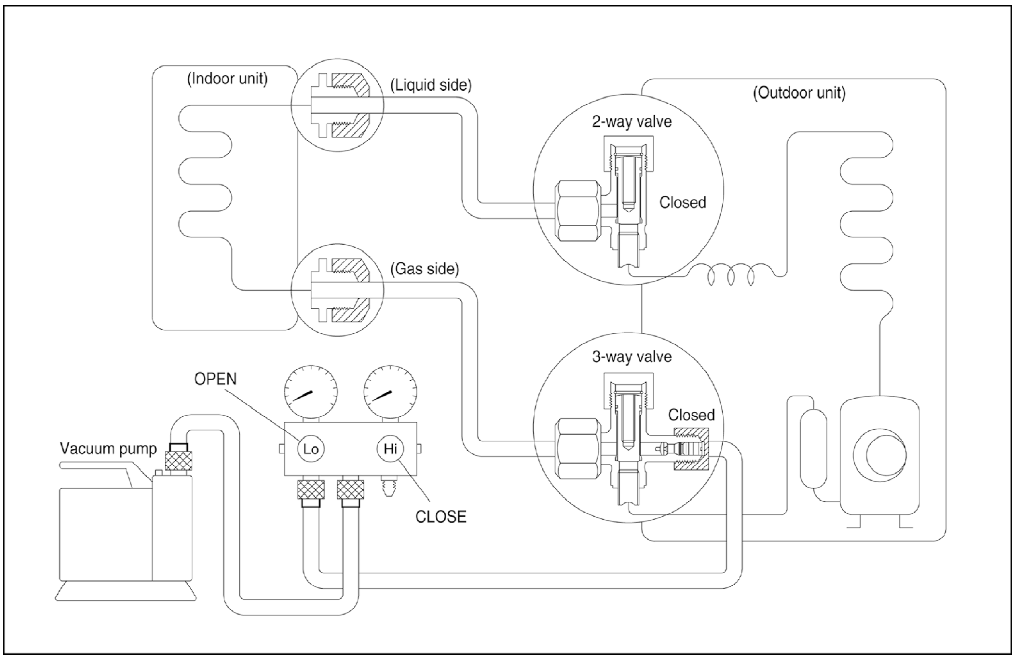
11. 2-way, 3-way Valve

	2-way Valve (Liquid Side)	3-way Valve (Gas Sid	
	 Flare nut Hexagonal wrench (4 mm) To piping connection Open position Closed position To outdoor unit	 Valve cap Flare nut Open Close To piping connection Service port cap To outdoor unit	
Works	**Shaft Position**	**Shaft Position**	**Servic**
Shipping	**Close (With valve cap)**	**Closed (With valve cap)**	**Clo (With**
Evacuation (Installation and Re-installation)	**Closed (Counter-Clockwise)**	**Closed (Clockwise)**	**Op (Pus**
Operation	**Open (With valve cap)**	**Open (With valve cap)**	**Clo (With**
Pumping down (Transferring)	**Closed (Clockwise)**	**Open (Counter-Clockwise)**	**Op (Conn manifol**
Evacuation (Servicing)	**Open**	**Open**	**Op With vacu**
Gas charging (Servicing)	**Open**	**Open**	**Op (With c cyli**
Pressure check (Servicing)	**Open**	**Open**	**Op (Conn manifol**

	2-way Valve (Liquid Side)	3-way Valve (Gas Sid	
Gas releasing (Servicing)	Open	Open	Op (Conn manifol

11.1. Evacuation of Installation

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.
If air remain in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Closed
(Gas side)
3-way valve
OPEN
Closed
Vacuum pump
Lo
Hi
CLOSE

Procedure:

1. **Connect a charging hose with a push pin to the Low side of a charging set and the service port of a 3-way valve.**
   - **Be sure to connect the end of the charging hose with the push pin to the service port.**
2. **Connect the centre hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 MPa (0 cmHg) to -0.1 MPa (-76 cmHg). Then evacuate the air for approximately ten minutes.**

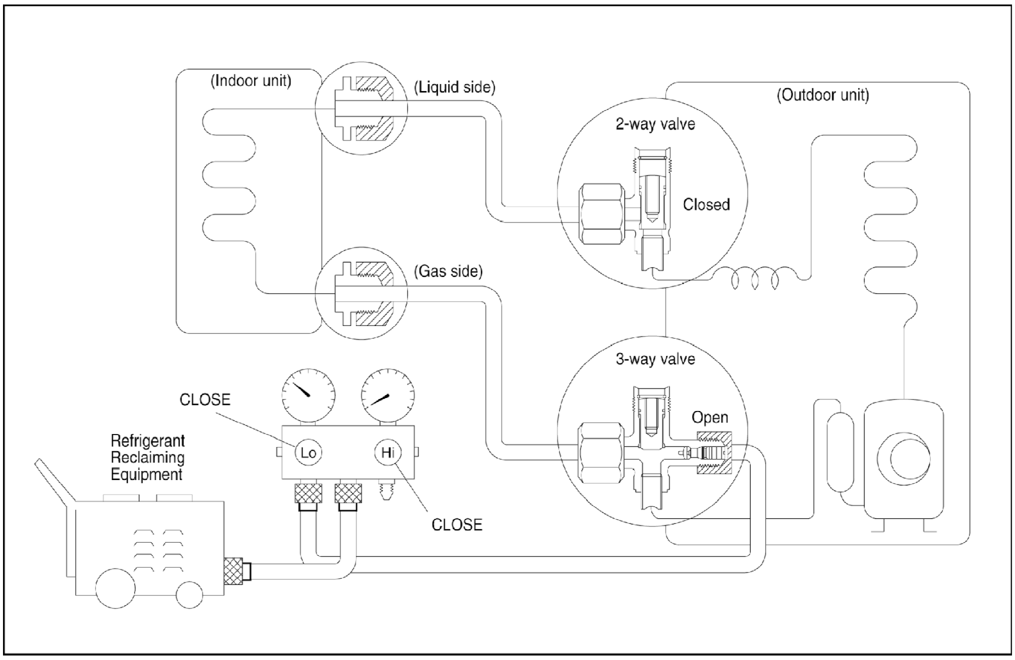
4. **Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.**
   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.**
6. **Tighten the service port cap at a torque of 18 N.m with a torque wrench.**
7. **Remove the valve caps of the 2-way valve and the 3-way valve. Position both of the valves to "open" using a hexagonal wrench (4 mm).**
8. **Mount the valve caps onto the 2-way and 3-way valves.**

   - Be sure to check for gas leakage.

Caution

If gauge needle does not move from 0 cmHg to -76 cmHg in step (3) above, take the following measures:
If the leaks stop when the piping connections are tightened further, continue working from step (3).
If the leaks do not stop when the connections are retightened, repair the location of the leak.

11.2. Pumping down


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Closed
(Gas side)
3-way valve
Open
CLOSE
Lo
Hi
Refrigerant
Reclaiming
Equipment
CLOSE

Procedure:

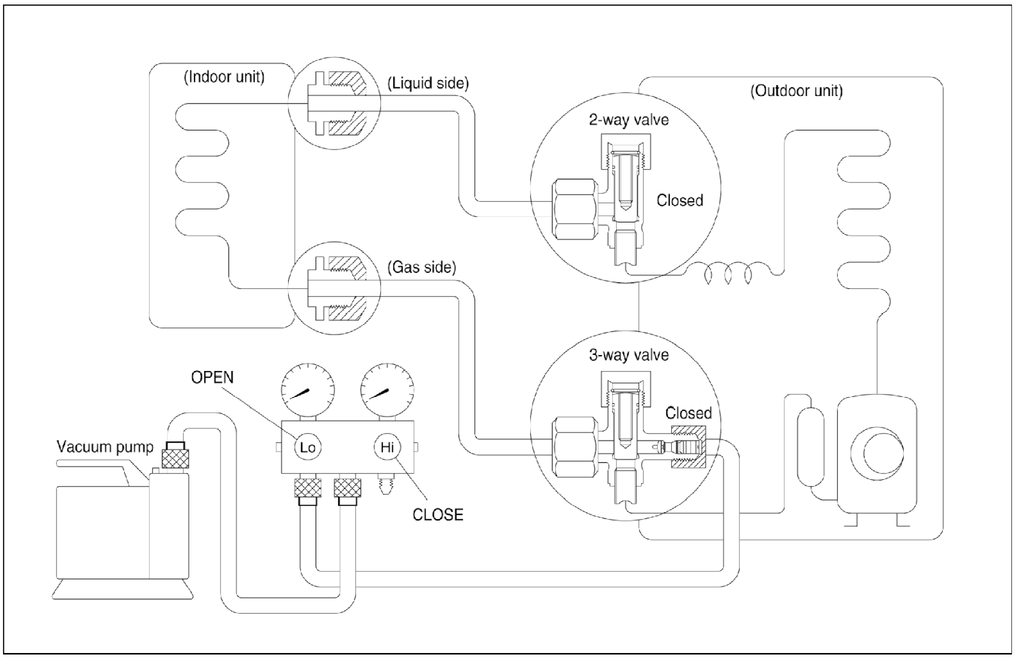
1. Confirm that both the 2-way and 3-way valves are set to the opened position.
    - Remove the valve stem caps and confirm that the valve stems are in the opened position.
    - Be sure to use a hexagonal wrench to operate the valve stems.
2. Operate the unit for 10 to 15 minutes.
3. Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.
    - Connect the charge hose with the push pin to the Gas service port.
4. Air purging of the charge hose.
    - Open the low-pressure valve on the charge set slightly to purge air from the charge hose.
5. Set the 2-way valve to the closed position.
6. Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0 MPa (0 kg/cm$_2$G).
   If the unit cannot be operated at the cooling condition (weather is rather cool), short the Pumping Down pins on the Main Control

P.C.B.
(Simply press the pumping down button if it is equipped.)
So that the unit can be operated.

7. **Immediately set the 3-way valve to the closed position.**
   - **Do this quickly so that the gauge ends up indicating 0.1 MPa (1 kg/cm^{2}G) to 0.3 MPa (3 kg/cm^{2}G).**
8. **Use refrigerant reclaiming equipment to collect refrigerant from indoor unit and pipes.**
9. **Disconnect the charge set, and mount the 2-way and 3-way valve's stem caps and the service port caps.**
   - **Use a torque wrench to tighten the service port cap to a torque of 18 N.m.**
   - **Be sure to check for gas leakage.**
10. **Disconnect pipes from indoor unit and outdoor unit.**

11.3. Evacuation of Re-installation

WHEN REINSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.
If air remain in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Closed
(Gas side)
3-way valve
Closed
OPEN
Vacuum pump
Lo
Hi
CLOSE

Procedure:

1. **Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve.**

   - Be sure to connect the end of the charging hose with the push pin to the service port.

2. **Connect the centre hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 MPa (0 cmHg) to -0.1 MPa (-76 cmHg). Then evacuate the air for approximately ten minutes.**
4. **Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.**
   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump.**
6. **Charge the pipes and indoor unit with gas refrigerant from 3-way valve service port, and then discharge the refrigerant until low side (gas side) gauge needle indicates 0.3 MPa (3 kg/cm$_2$).**
7. **Tighten the service port cap at a torque of 18 N.m with a torque wrench.**
8. **Remove the valve caps of the 2-way valve and the 3-way valve. Position both of the valves to “open” using a hexagonal wrench (4 mm).**
9. **Mount the valve caps onto the 2-way and 3-way valves.**

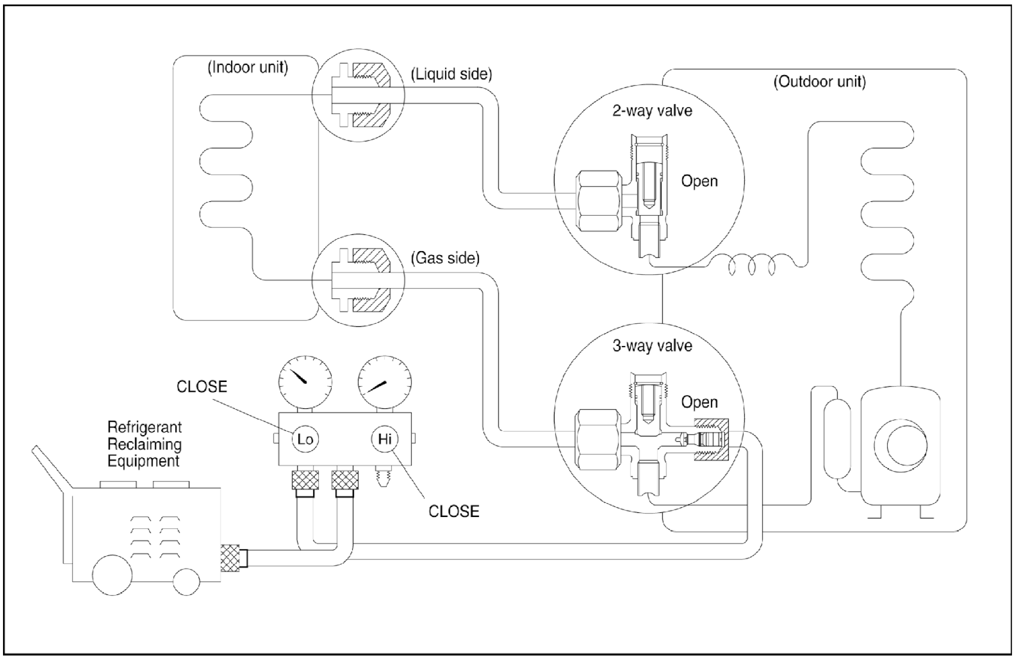
   - BE SURE TO USE REFRIGERANT RECLAIMING EQUIPMENT WHILE DISCHARGING THE REFRIGERANT.
   - Purge the air from charge set’s centre hose.
   - Be sure to check for gas leakage.

Caution

If gauge needle does not move from 0 MPA (0 cmHg) to -0.1 MPa (-76 cmHg) in step (3) above, take the following measures:
If the leaks stop when the piping connections are tightened further, continue working from step 3.
If the leaks do not stop when the connections are retightened, repair the location of the leak.

11.4. Balance refrigerant of the 2-way, 3-way valves

(Lack of refrigerant in the refrigeration cycle)


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Open
(Gas side)
3-way valve
Open
CLOSE
Refrigerant
Reclaiming
Equipment
Lo
Hi
CLOSE

Procedure:

1. **Confirm that both the 2-way and 3-way valves are set to the open position.**
2. **Connect the charge set to the 3-way valve's service port.**
   - **Leave the valve on the charge set closed.**
   - **Connect the charge hose with the push-pin to the service port.**
3. **Connect the charge set's centre hose to refrigerant reclaiming equipment.**
   - **Purge the air from charge hose.**

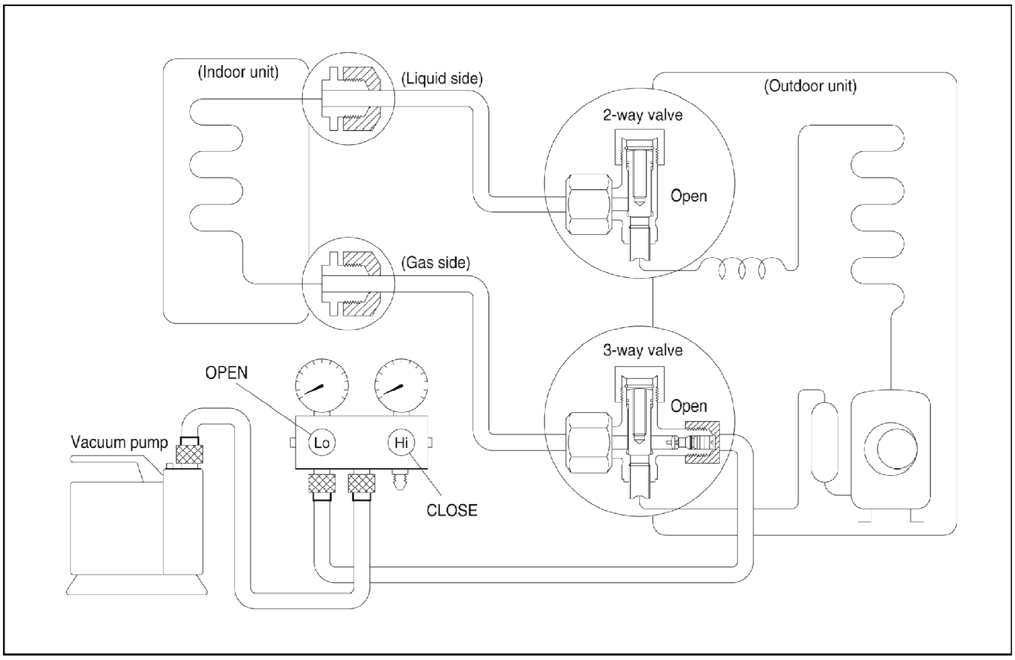
4. Open the valve (Low side) on the charge set and discharge the refrigerant until the gauge indicates 0.05 MPa (0.5 kg/cm$_2$G) to 0.1 MPa (1 kg/cm$_2$G).

- **If there is no air in the refrigeration cycle (the pressure when the air conditioner is not running is higher than 0.1 MPa (1 kg/ cm2G), discharge the refrigerant until the gauge indicates 0.05 MPa (0.5 km/cm2G) to 0.1 MPa (1 kg/cm2G). If this is the case, it will not be necessary to apply a evacuation.**
- **Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will also be discharged.**

5. Turn on refrigerant reclaiming equipment.

11.5. Evacuation

(No refrigerant in the refrigeration cycle)


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Open
(Gas side)
3-way valve
Open
OPEN
Vacuum pump
Lo
Hi
CLOSE

Procedure:

1. Connect the vacuum pump to the charge set's centre hose.

2. Evacuation for approximately one hour.

- **Confirm that the gauge needle has moved toward -0.1 MPa (-76 cmHg) [vacuum of 4 mmHg or less.]**

3. Close the valve (Low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move

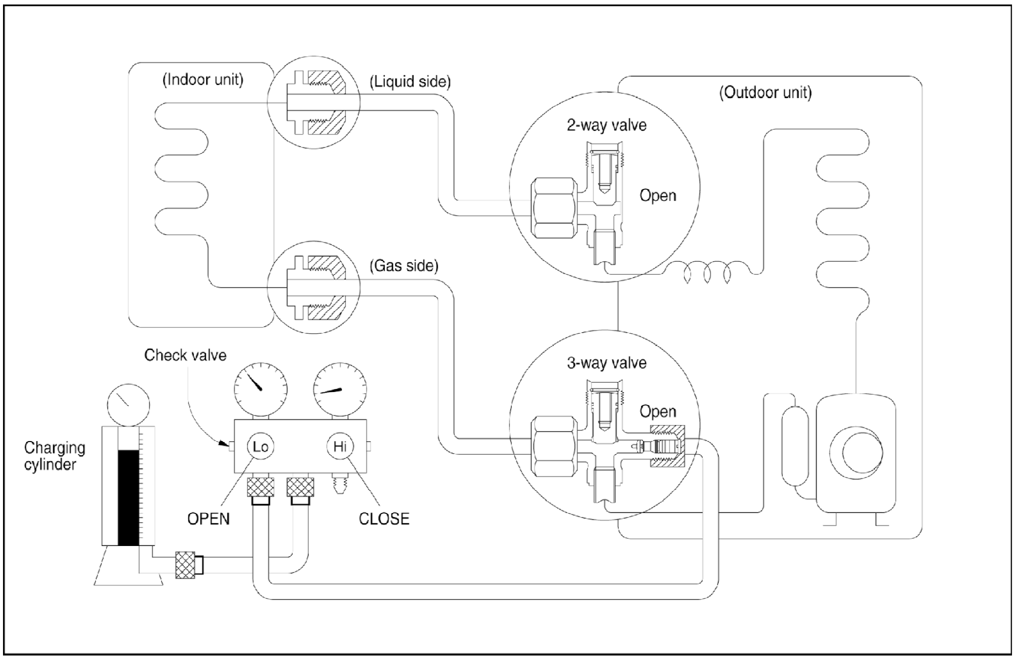
(approximately 5 minutes after turning off the vacuum pump).

4. Disconnect the charge hose from the vacuum pump.

- Vacuum pump oil
If the vacuum pump oil becomes dirty or depleted, replenish as needed.

11.6. Gas charging

(After Evacuation)


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Open
(Gas side)
Check valve
3-way valve
Open
Charging cylinder
Lo
Hi
OPEN
CLOSE

Procedure:

1. Connect the charge hose to the charging cylinder.

- Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.

2. Purge the air from the charge hose.

- Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).

3. Open the valve (Low side) on the charge set and charge the system with liquid refrigerant.

- If the system cannot be charged with the specified amount of refrigerant, it can be charged with a little at a time

(approximately 150 g each time) while operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure. (pumping down-pin)

This is different from previous procedures. Because you are charging with liquid refrigerant from the gas side, absolutely do no attempt to charge with large amount of liquid refrigerant while operating the air conditioner.

4. Immediately disconnect the charge hose from the 3-way valve's service port.
   - Stopping partway will allow the refrigerant to be discharged.
   - If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.
5. Mount the valve stem caps and the service port cap.
   - Use torque wrench to tighten the service port cap to a torque of 18 N.m.
   - Be sure to check for gas leakage.

12. Servicing Information

- Inspection points for the Indoor Electronic Controller
  1. The Electronic Controller, a signal Receiver and an Indicator (Fig. 2) can be seen by the below steps:
     - Remove the 2 caps and 2 screws at the bottom of the front grille. (Fig. 1)
     - Remove the front grille by releasing the 2 hooks at the top of the front grille. (Fig. 1)
     - Remove the control board cover by releasing the 2 tabs at left, 1 tab on top and 2 more tabs at right side of the control board cover. (Fig. 1)
  2. To remove the Electronic Controller, release the hook that holding the electronic controller. (Fig. 2)
- Indoor Fan Motor removal procedure:-
  1. Remove the control board by:-

- Releasing CN-C (GRN) connector. (Fig. 2)
- Releasing CN-FM (GRN) connector. (Fig. 2)
- Releasing CN-STM connector. (Fig. 2)
- Remove the earth wire screw. (Fig. 2)
- Release the intake air sensor. (Fig. 2)
- Release the piping sensor. (Fig. 2)
- Unhook and release the terminal board. (Fig. 3)
- Remove the right and left screws. (Fig. 3)
- Then remove the control board by pressing down the hook at the left and press up the right hook. (Fig. 3)

2. Remove the Fan Motor by:-

- Release the Fan motor leadwire by pressing the hook at the center of the connector. (Fig. 4)
- Then remove the particular piece that holding the fan motor by pressing the tab. (Fig. 4)
- Remove the discharge grille and then the drain hose. (Fig. 4)

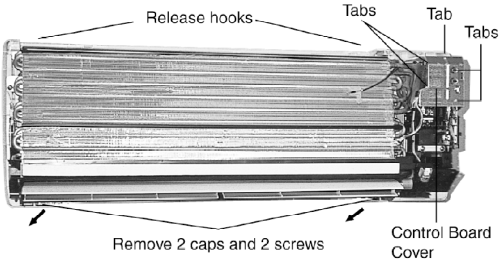

Release hooks
Tabs
Tab
Tabs
Remove 2 caps and 2 screws
Control Board Cover

Fig. 1

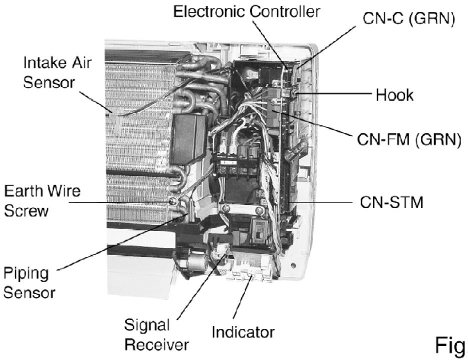

Electronic Controller
CN-C (GRN)
Intake Air Sensor
Hook
CN-FM (GRN)
Earth Wire Screw
CN-STM
Piping Sensor
Signal Receiver
Indicator

Fig. 2

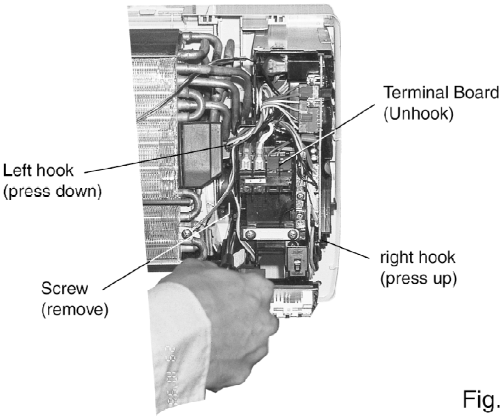

Terminal Board
(Unhook)
Left hook
(press down)
right hook
(press up)
Screw
(remove)

Fig. 3

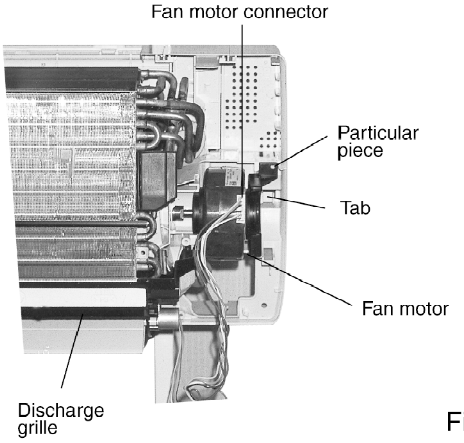

Fan motor connector
Particular
piece
Tab
Fan motor
Discharge
grille

Fig. 4

- Finally remove the fan motor by removing the screw. (Fig. 5)

- REMINDER - To reinstall the fan motor, adjust the connector of the fan motor as Figure 5.

- Cross Flow Fan Removal Procedure.

1. **Remove the control board and the fan motor by referring to the “Indoor Fan Motor Removal Procedure”.**
2. **Remove the evaporator screw. (Fig. 6)**
3. **Press the particular piece to loosen the evaporator. (Fig. 7)**
4. **Remove the bearing. (Fig. 7)**
5. **Push up the evaporator and take out the cross-flow Fan. (Fig. 7)**

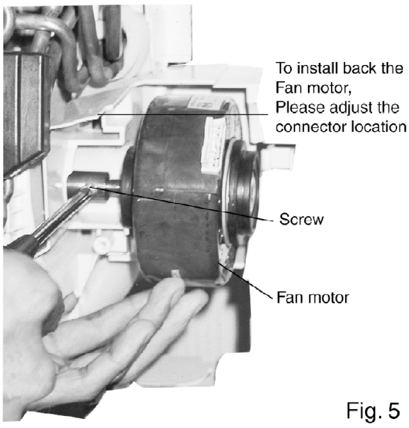

To install back the Fan motor, Please adjust the connector location
Screw
Fan motor

Fig. 5

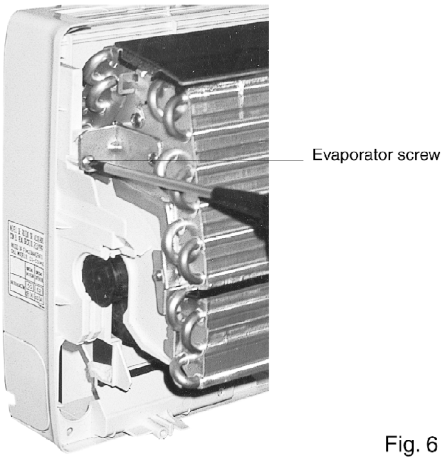

Evaporator screw

Fig. 6

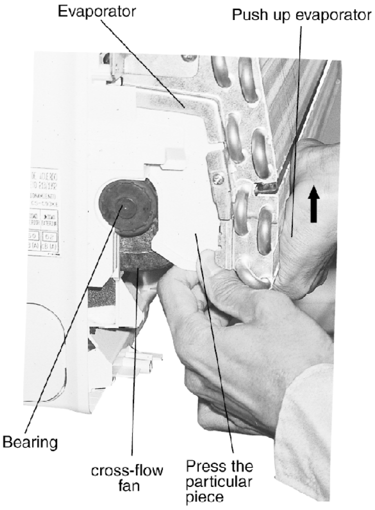

Evaporator
Push up evaporator
Bearing
cross-flow fan
Press the particular piece

Fig. 7

- Remote Control Reset

When the batteries are inserted for the first time, or the batteries are replaced, all the indications will blink and the remote control might not work.

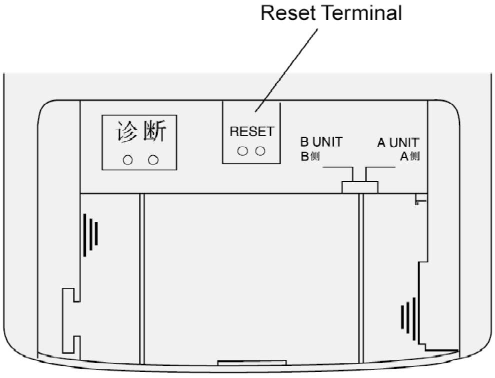
If this happen, remove the back cover of the remote control and you will find a resetting terminal, and by shorting it with a minus

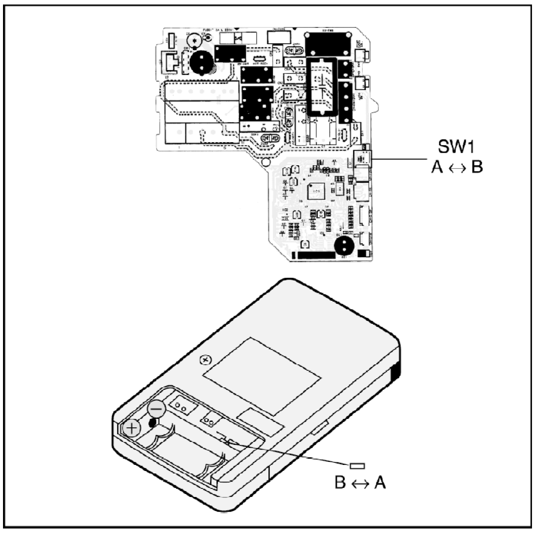
screwdriver, it will return to normal.

- Changing the wireless remote control transmission code

When two indoor units are installed in the same room, in order to prevent operating errors caused by using two remote controls, set up the remote control [B ←→ A] switch (SW1).

The unit is set to A when it is shipped.





- By adding a jumper wire to the remote control side and a carbon resistor (1/4 W, 10 kΩ) to the indoor printed circuit board, it is possible to select from 4 types of transmission codes including one at time of delivery condition (1).

	Remote control		Indoor printed circuit board		Note
	Switch B ↔ A	J - B	Switch SW1	RX1	
1	A	——	OFF	——	At product delivery
2	B	——	ON	——	
3	A	Jumper wire	OFF	Jumper wire	
4	B	Jumper wire	ON	Jumper wire	

NOTE: As of information in Electronic Circuit Diagram.

13. Troubleshooting Guide

13.1. Refrigeration cycle system

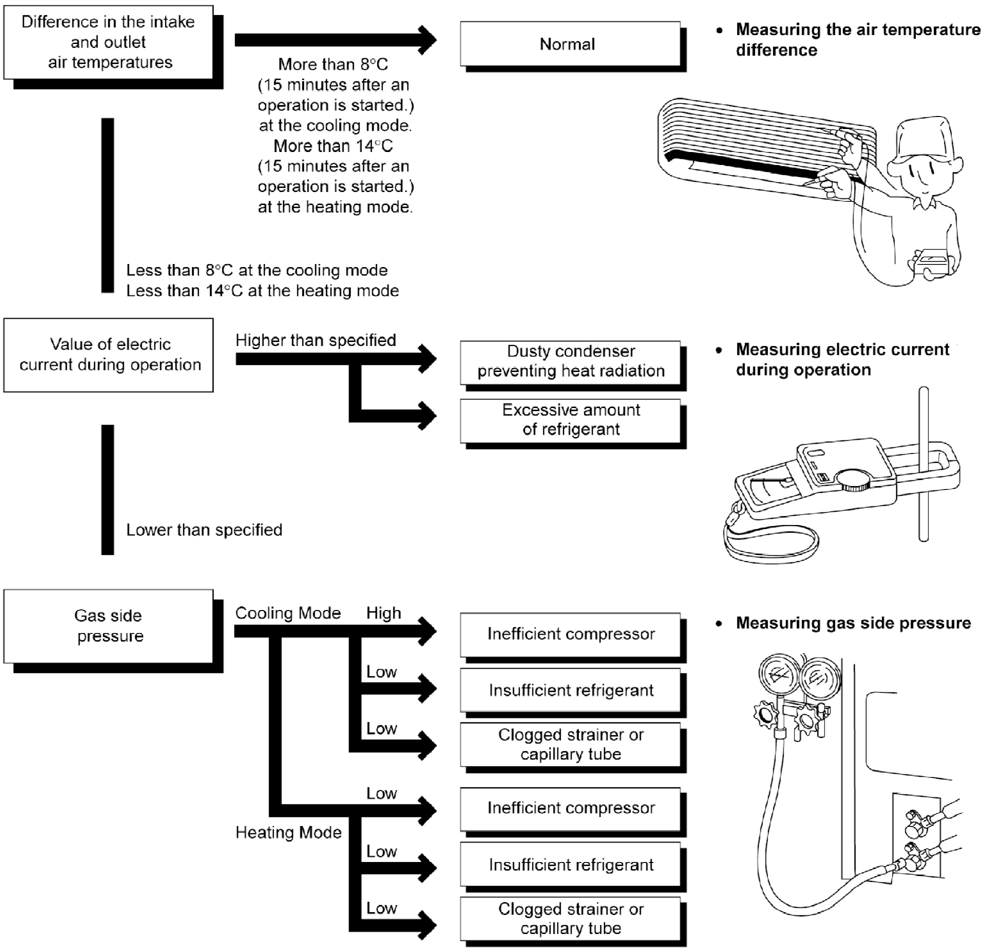
In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan.

The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table to the right.

Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure Mpa (kg/cm²G)	Outlet air temperature (°C)
Cooling Mode	0.4 ~ 0.6 (4 ~ 6)	12 ~ 16
Heating Mode	1.5 ~ 2.1 (15 ~ 21)	36 ~ 45

* Condition: Indoor fan speed; High
Outdoor temperature 35°C at the cooling mode and 7°C at the heating mode


Difference in the intake and outlet air temperatures
More than 8°C (15 minutes after an operation is started.) at the cooling mode.
More than 14°C (15 minutes after an operation is started.) at the heating mode.
Normal
• Measuring the air temperature difference
Less than 8°C at the cooling mode
Less than 14°C at the heating mode
Value of electric current during operation
Higher than specified
Dusty condenser preventing heat radiation
Excessive amount of refrigerant
• Measuring electric current during operation
Lower than specified
Gas side pressure
Cooling Mode
High
Inefficient compressor
Low
Insufficient refrigerant
Low
Clogged strainer or capillary tube
• Measuring gas side pressure
Low
Inefficient compressor
Heating Mode
Low
Insufficient refrigerant
Low
Clogged strainer or capillary tube

13.1.1. Relationship between the condition of the air conditioner and pressure and electric current

Condition of the air conditoner	Cooling Mode			Heating Mode		
	Low Pressure	High Pressure	Electric current during operation	Low Pressure	High Pressure	El cu du op
Insufficient refrigerant (gas leakage)	↘	↘	↘	↘	↘	↘
Clogged capillary tube or Strainer	↘	↘	↘	↘	↘	↘
Short circuit in the indoor unit	↘	↘	↘	↗	↗	↗
Heat radiation deficiency of the outdoor unit	↗	↗	↗	↘	↘	↘
Inefficient compression	↗	↘	↘	↗	↘	↘

- Carry out the measurements of pressure, electric current, and temperature fifteen minutes after an operation is started.

13.1.2. Diagnosis methods of a malfunction of a compressor and 4-way valve

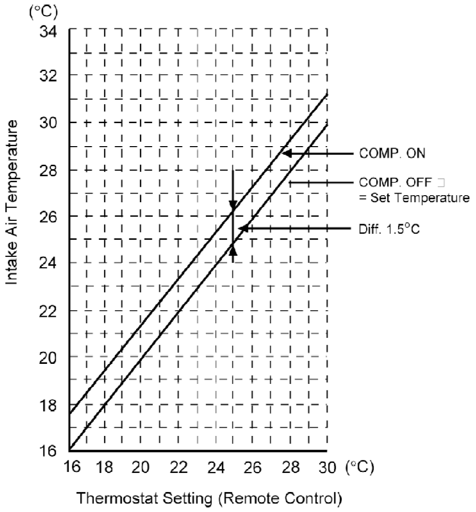
Nature of fault	Symptom
Insufficient compressing of a compressor	-Electric current during operation becomes approximately 20% lower than the normal valu -The discharge tube of the compressor becomes abnormally hot (normally 70 to 90°C). -The difference between high pressure and low pressure becomes almost zero.
Locked compressor	-Electric current reaches a high level abnormally, and the value exceeds the limit of an am some cases, a breaker turns off. -The compressor is a humming sound.
Insufficient switches of the 4-way valve	-Electric current during operation becomes approximately 80% lower than the normal valu -The temperature different between from the discharge tube to the 4-way valve and from s to the 4-way valve becomes almost zero.

14. Technical Data

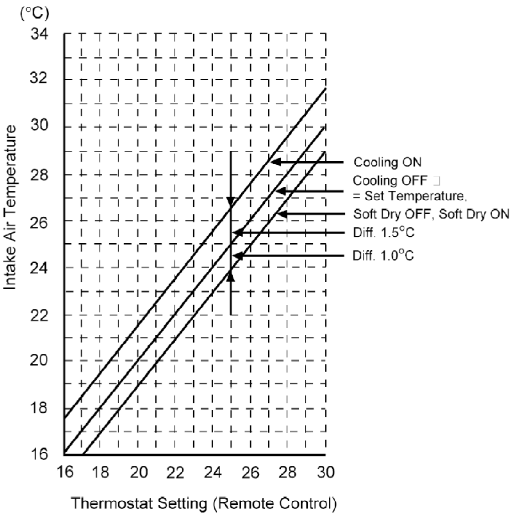
■ Thermostat characteristics

CS-A73KR / CS-A93KR / CS-A123KR

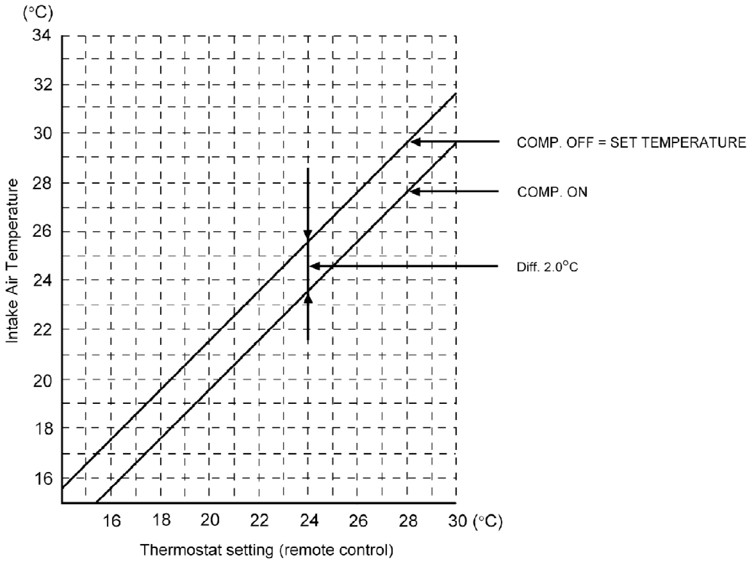
- **Cooling**



- **Soft Dry**



- **Heating**



■ Sensible Capacity Chart

- **CS-A73KR**

240V	Outdoor Temp. (°C)											
Indoor Wet Bulb Temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	2.07	1.88	0.61	1.94	1.81	0.65	1.81	1.69	0.70	1.65	1.46	0.75
19.0°C				2.11		0.66						
19.5°C	2.30	1.65	0.61	2.15	1.54	0.66	2.00	1.52	0.71	1.84	1.46	0.76
22.0°C	2.55	1.54	0.62	2.38	1.35	0.67	2.22	1.20	0.72	2.03	1.06	0.77

220V	Outdoor Temp. (°C)											
Indoor Wet Bulb Temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	2.02	1.83	0.56	1.90	1.77	0.66	1.77	1.65	0.65	1.61	1.42	0.70
19.0°C				2.06		0.61						
19.5°C	2.25	1.61	0.57	2.10	1.50	0.61	1.96	1.48	0.65	1.79	1.42	0.70
22.0°C	2.49	1.50	0.57	2.33	1.32	0.62	2.16	1.17	0.66	1.98	1.03	0.71

- **CS-A93KR**

240V	Outdoor Temp. (°C)											
Indoor Wet Bulb Temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	2.60	2.36	0.89	2.44	2.28	0.96	2.28	2.12	1.03	2.07	1.83	1.11
19.0°C				2.65		0.97						
19.5°C	2.89	2.07	0.90	2.70	1.93	0.97	2.52	1.91	1.04	2.31	1.83	1.12
22.0°C	3.21	1.93	0.91	2.99	1.70	0.98	2.78	1.51	1.06	2.54	1.33	1.13

220V	Outdoor Temp. (°C)											
Indoor Wet Bulb Temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	2.55	2.31	0.85	2.39	2.24	0.91	2.24	2.08	0.98	2.03	1.79	1.05
19.0°C				2.60		0.92						
19.5°C	2.83	2.03	0.86	2.65	1.90	0.92	2.47	1.87	0.98	2.26	1.79	1.06
22.0°C	3.15	1.90	0.86	2.94	1.66	0.93	2.73	1.48	1.00	2.50	1.30	1.08

- **CS-A123KR**

240V	Outdoor Temp. (°C)											
Indoor Wet Bulb Temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	3.33	3.03	1.21	3.13	2.92	1.30	2.92	2.72	1.39	2.65	2.35	1.49
19.0°C				3.40		1.31						
19.5°C	3.71	2.65	1.22	3.47	2.48	1.31	3.23	2.45	1.40	2.96	2.35	1.51
22.0°C	4.11	2.48	1.23	3.84	2.18	1.32	3.57	1.94	1.43	3.26	1.70	1.53

220V	Outdoor Temp. (°C)											
Indoor Wet Bulb Temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	3.33	3.03	1.16	3.13	2.92	1.25	2.92	2.72	1.34	2.65	2.35	1.44
19.0°C				3.40		1.26						
19.5°C	3.71	2.65	1.17	3.47	2.48	1.26	3.23	2.45	1.35	2.96	2.35	1.45
22.0°C	4.11	2.48	1.18	3.84	2.18	1.27	3.57	1.94	1.37	3.26	1.70	1.47

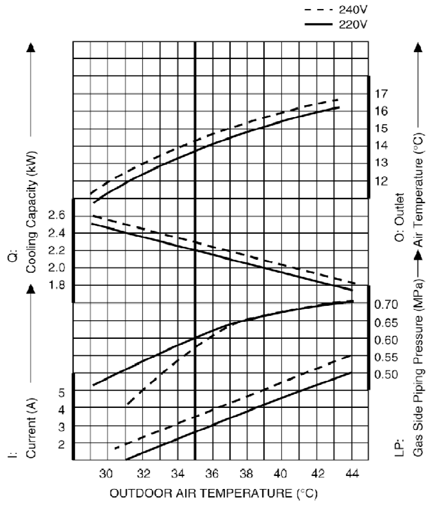
TC - Total Cooling / Heating Capacity (kW)
SHC - Sensible Heat Capacity (kW)
IP - Input Power (kW)

Indoor 27°C / 19°C
Outdoor 35°C /24°C

■ Operation characteristics

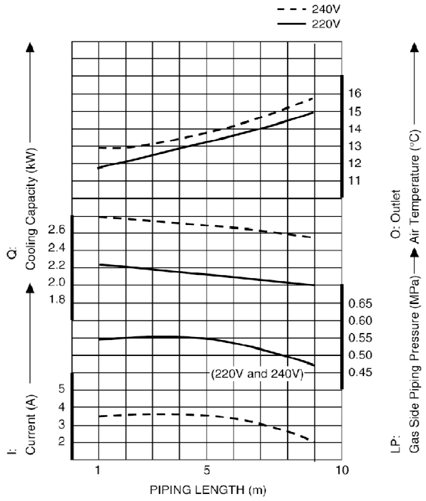
CS-A73KR / CU-A73KR

- **Cooling Characteristic**



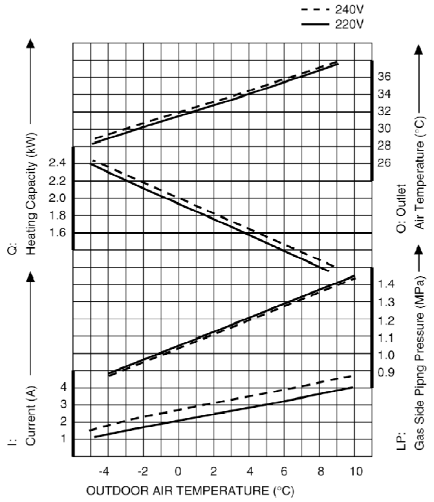
[Condition] Room temperature: 27/19°C
Cooling operation: at High fan
Piping length: 7.5m

- **Piping Length Characteristic (Cooling)**



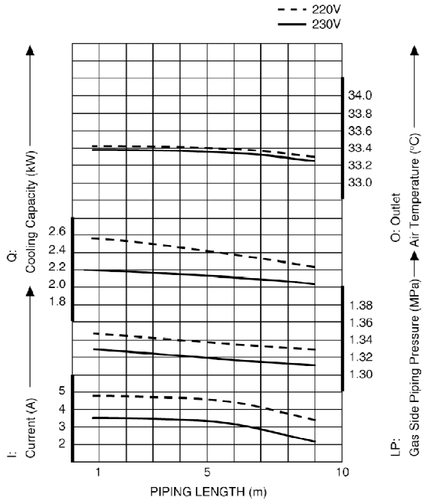
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35°C
Cooling operation: At High fan

- **Heating Characteristic**



[Condition] Room temperature: 20°C
Heating operation: at High fan
Piping length: 7.5m

- **Piping Length Characteristic (Heating)**

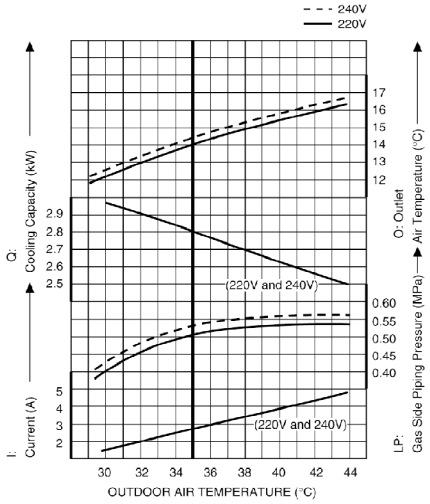


[Condition] Room temperature: 20°C
Outdoor temperature: 7/6°C
Heating operation: At High fan

■ Operation characteristics

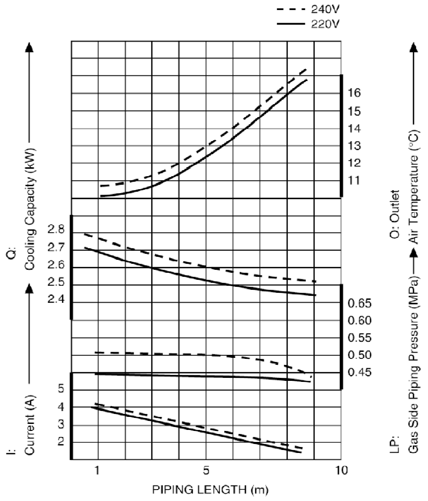
CS-A93KR / CU-A93KR

• Cooling Characteristic



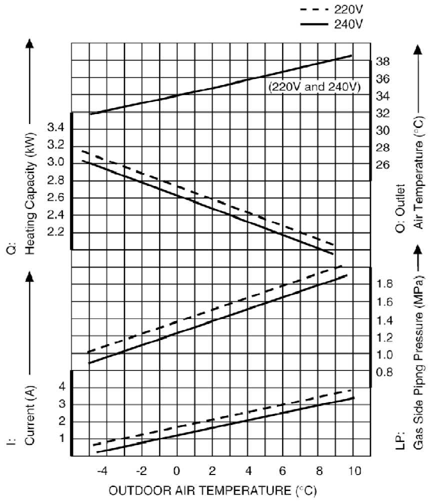
[Condition] Room temperature: 27/19°C
Cooling operation: at High fan
Piping length: 7.5m

• Piping Length Characteristic (Cooling)



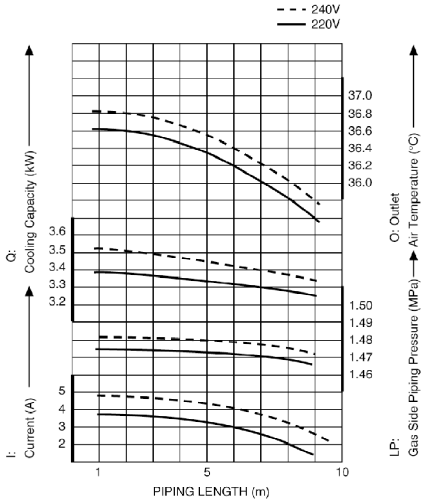
[Condition] Room temperature: 27/19°C
Outdoor temperature: 3°C
Cooling operation: at High fan

• Heating Characteristic



[Condition] Room temperature: 20°C
Heating operation: at High fan
Piping length: 7.5m

• Piping Length Characteristic (Heating)

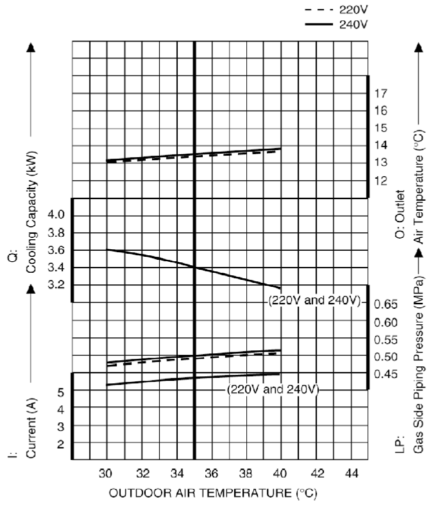


[Condition] Room temperature: 20°C
Otudoor temperature: 7/6°C
Heating operation: at High fan

■ Operation characteristics

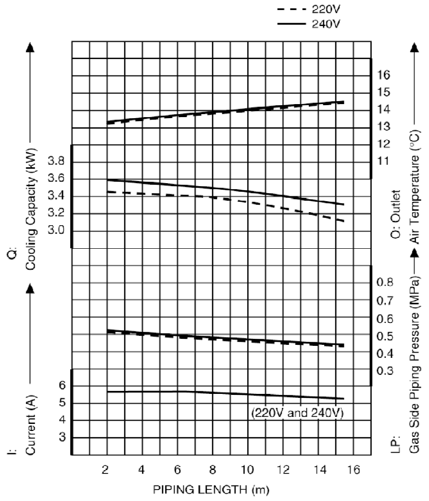
CS-A123KR / CU-A123KR

- **Cooling Characteristic**



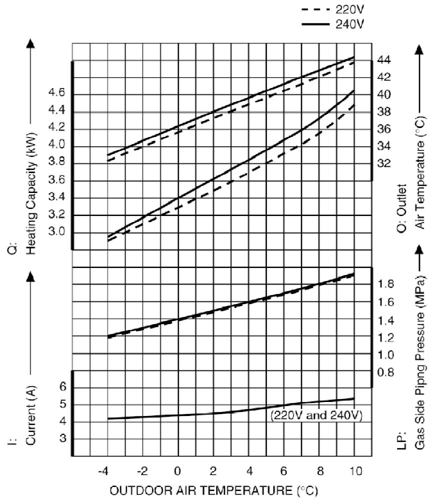
[Condition] Room temperature: 27/19°C
Cooling operation: at High fan
Piping length: 7.5m

- **Piping Length Characteristic (Cooling)**



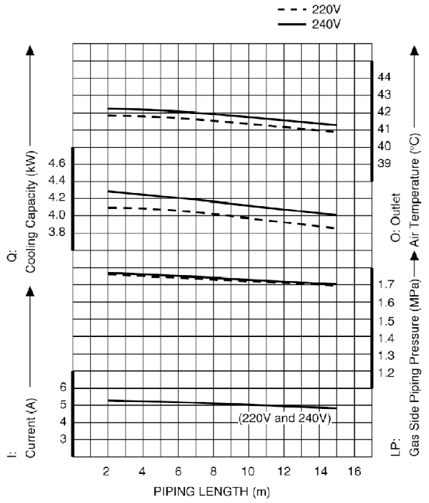
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling operation: at High fan

- **Heating Characteristic**



[Condition] Room temperature: 20°C
Heating operation: at High fan
Piping length: 7.5m

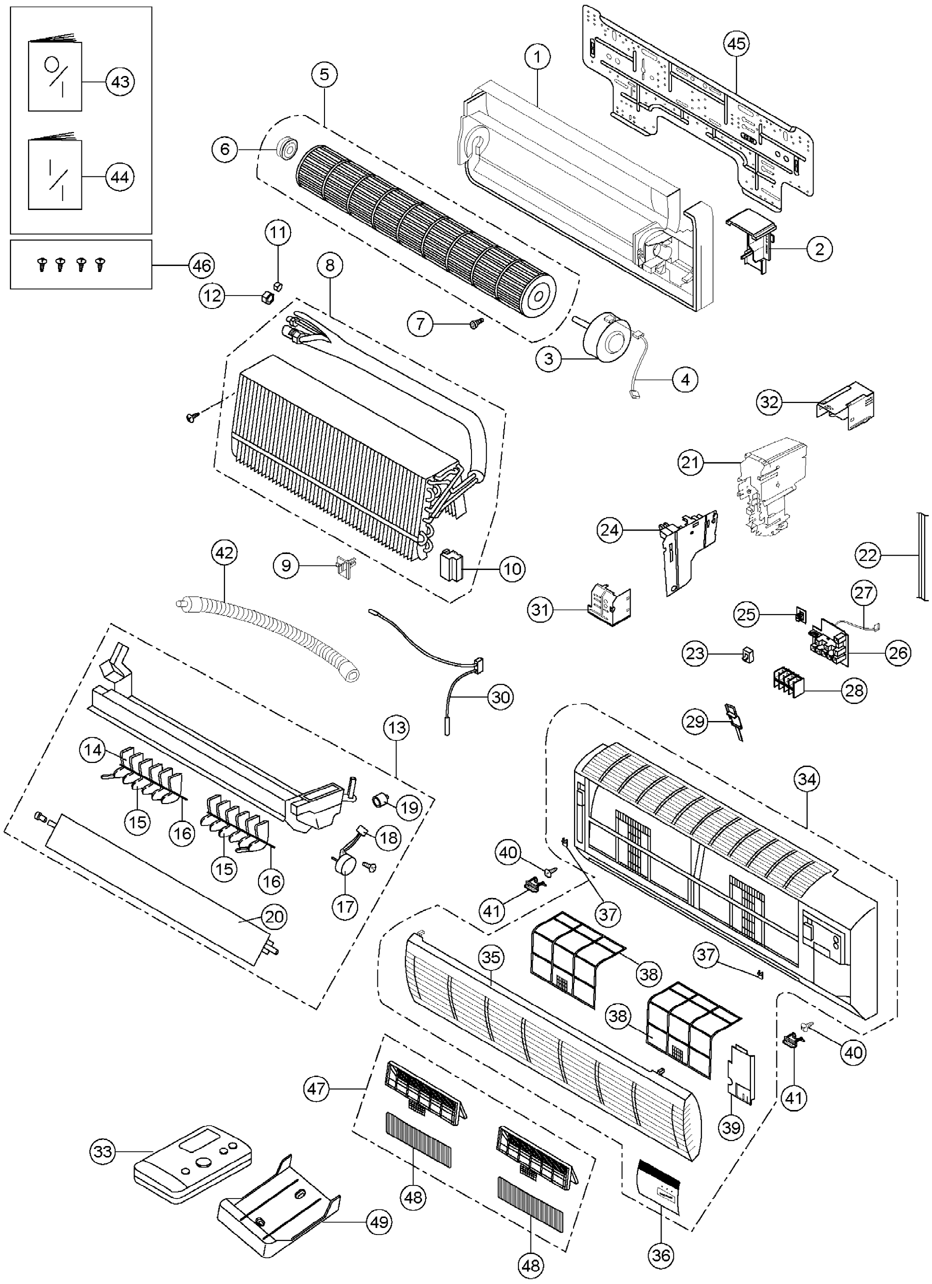
- **Piping Length Characteristic (Heating)**



[Condition] Room temperature: 20°C
Otudoor temperature: 7/6°C
Heating operation: at High fan

15. Exploded View

CS-A73KR / CS-A93KR / CS-A123KR


43
44
46
5
6
1
45
2
11
12
8
7
3
4
32
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42
9
10
31
27
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16
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39
33
48
49
48
36

Note:
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

16. Replacement Parts List

<Model: CS-A73KR / CS-A93KR / CS-A123KR>

NO.	DESCRIPTION & NAME	Q’TY	CS-A73KR	CS-A93KR	CS-A123KR	REMARKS
1	CHASSY COMPLETE	1	CWD50C338	←	←	
2	PARTICULAR PIECE	1	CWD931019	←	←	
3	FAN MOTOR	1	CWA92288	CWA92296	CWA92290	0
4	LEAD WIRE - FAN MOTOR	1	CWA67C2097	←	←	
5	CROSS FLOW FAN	1	CWH02C060	←	←	
6	BEARING	1	CWH64K007	←	←	
7	SCREW - CROSS FLOW FAN	1	CWH4580304	←	←	
8	EVAPORATOR & TUBE ASS’Y COMPLETE	1	CWB30C259	←	CWB30C260	
9	INTAKE AIR SENSOR HOLDER	1	CWH32142	←	←	
10	ANTI VIBRATION BUSHING	1	CWH50211	←	←	
11	FLARE NUT (1/4”)	1	CWH6002140	←	←	
12	FLARE NUT (1/2”) OR (3/8”)	1	CWT25005 (3/8”)	←	CWT25007 (1/2”)	
13	DISCHARGE GRILLE COMPLETE	1	CWE20C610	CWE20C624	←	
14	VERTICAL VANE WITH TAB	2	CWE24458	←	←	
15	VERTICAL VANE	10	CWE24457	←	←	
16	CONNECTING BAR	2	CWE26194	←	←	
17	AIR SWING MOTOR	1	CWA98260	CWA98C033	←	0
18	LEAD WIRE - AIR SWING MOTOR	1	CWA67C2106	←	←	
19	CAP FOR DRAIN TRAY	1	CWH52C003	←	←	
20	HORIZONTAL VANE	1	CWE24462	←	←	
21	CONTROL BOARD	1	CWH10965A	CWH10965A	←	
22	POWER SUPPLY CORD	1	CWA20C751	←	←	
23	SLIDE SWITCH	1	CWA04088	←	←	0
24	ELECTRONIC CONTROLLER	1	CWA742209	CWA742210	←	0
25	RECEIVER	1	CWA74919	←	←	0
26	INDICATOR COMPLETE	1	CWA741376	←	←	0
27	LEAD WIRE - INDICATOR	1	CWA67C2105	←	←	
28	TERMINAL BOARD	1	CWA28C575	←	CWA28C576	0
29	INDICATOR HOLDER	1	CWD931018A	←	←	
30	SENSOR COMPLETE	1	CWA50C608	←	←	0
31	CONTROL BOARD FRONT COVER	1	CWH13456	←	←	
32	CONTROL BOARD TOP COVER	1	CWH13457	←	←	
33	REMOTE CONTROL COMPLETE	1	CWA75C723	←	←	0
34	FRONT GRILLE COMPLETE	1	CWE11C978	←	←	
35	INTAKE GRILLE COMPLETE	1	CWE22C333	←	←	
36	DECORATION BASE COMPLETE	1	CWE35C023	←	←	
37	TAB	2	CWD931020	←	←	
38	AIR FILTER	2	CWD00240	←	←	
39	GRILLE DOOR	1	CWE14236	←	←	
40	SCREW FOR FRONT GRILLE	2	XTN4+16C	←	←	
41	CAP FOR FRONT GRILLE	2	CWH52267	←	←	
42	DRAIN HOSE	1	CWH5880580	←	←	
43	OPERARTION INSTRUCTIONS	1	CWF563124	←	←	
44	INSTALLATION INSTRUCTIONS	1	CWF612075	←	CWF612076	

NO.	DESCRIPTION & NAME	Q'TY	CS-A73KR	CS-A93KR	CS-A123KR	REMARKS
45	INSTALLATION PLATE	1	CWH36157	←	←	
46	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C194	←	←	
47	AIR PURIFYING FILTER COMPLETE	1	CWD00C111	←	←	
48	AIR PURIFYING FILTER	2	CWD00220	←	←	0
49	REMOTE CONTROL HOLDER	1	CWH36161	←	←	

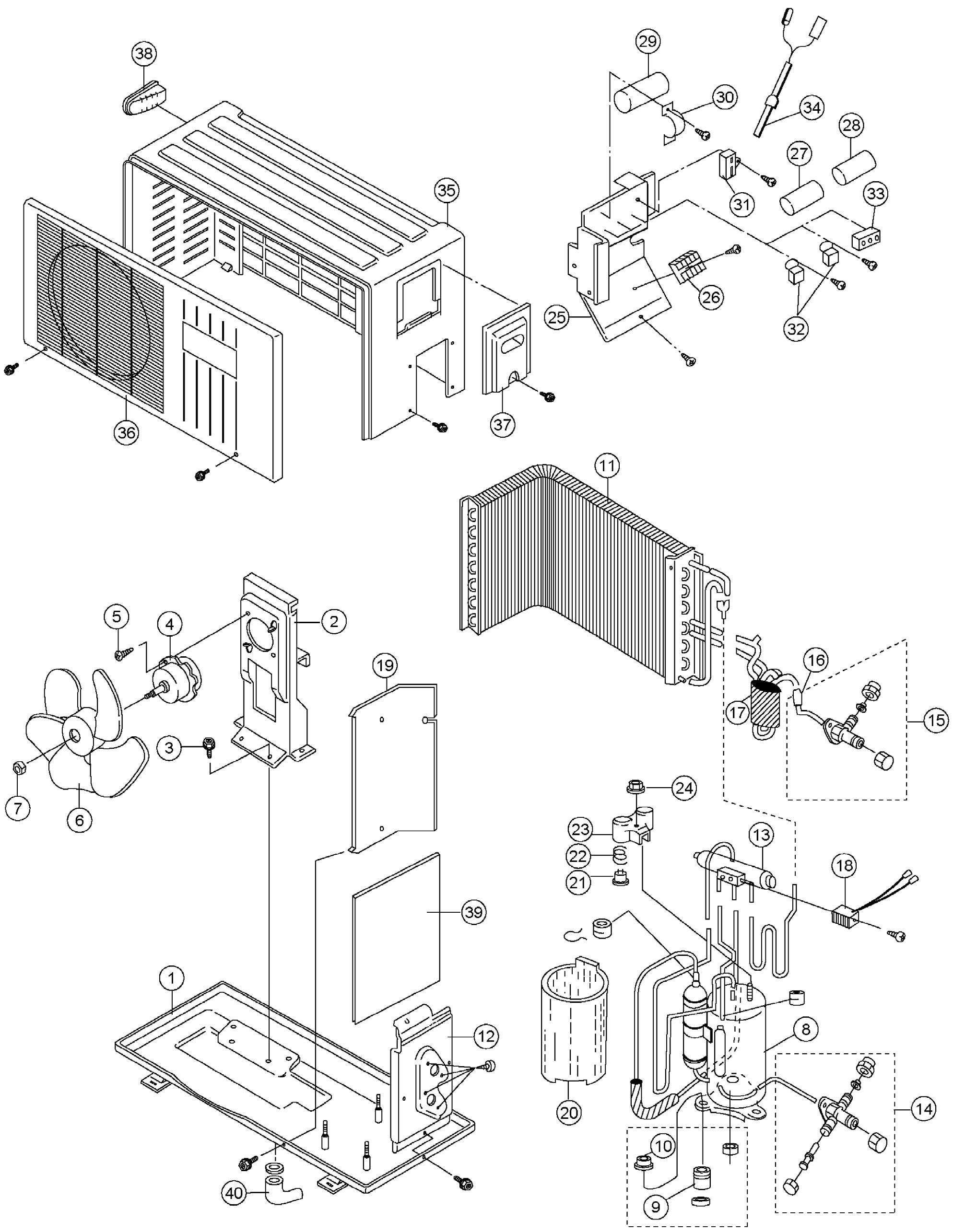
(Note)

- All parts are supplied from MACC, Malaysia (Vendor Code: 086).

- "O" marked parts are recommended to be kept in stock.

17. Exploded View

CU-A73KR / CU-A93KR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Note:
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

18. Replacement Parts List

<Model: CU-A73KR / CU-A93KR>

NO.	DESCRIPTION & NAME	Q'TY	CU-A73KR	CU-A93KR	REMARKS
1	CHASSY ASS'Y	1	CWD50K438F	CWD50K456D	
2	FAN MOTOR BRACKET	1	CWD54113	←	
3	SCREW - FAN MOTOR BRACKET	4	CWH4580399	←	
4	FAN MOTOR	1	CWA95245	←	0
5	SCREW - FAN MOTOR MOUNT	3	CWH55027	←	
6	PROPELLER FAN	1	CWH00K052	←	
7	NUT - PROPELLER FAN	1	CWH56032	←	
8	COMPRESSOR	1	2RS122D5AB02	2PS164D3AD02	0
9	ANTI - VIBRATION BUSHING	3	CWH50077	←	
10	NUT - COMPRESSOR MOUNT	3	CWH56000	←	
11	CONDENSER	1	CWB32C043	←	
12	HOLDER COUPLING ASS'Y	1	CWH35K017A	←	
13	4-WAY VALVE	1	CWB00002	←	0
14	3-WAY VALVE	1	CWB01479	←	0
15	2-WAY VALVE	1	CWB02307	←	0
16	STRAINER	1	CWB11025	←	
17	TUBE ASS'Y (CHECK VALVE / CAPILLARY)	1	CWT01C260	CWT01C257	
18	V - COIL COMPLETE	1	CWA43C2002	←	0
19	SOUND PROOF BOARD	1	CWH15266	←	
20	SOUND PROOF MATERIAL / (FOR COMPRESSOR)	1	CWG30786	CWG302031	
21	OVERLOAD PROTECTOR	1	CWA12345	CWA12346	0
22	HOLDER - O.L.P.	1	CWH7041200	←	
23	TERMINAL COVER	1	CWH17006	←	
24	NUT - TERMINAL COVER	1	CWH7080300	←	
25	CONTROL BOARD	1	CWH10881	←	
26	TERMINAL BOARD ASS'Y	1	CWA28K216	←	
27	ELECTROLYTIC CAPACITOR	1	CWA32C045	←	0
28	ELECTROLYTIC CAPACITOR	1	CWA32C067	←	0
29	CAPACITOR - COMPRESSOR	1	CWA31349 (15 μ F, 440V)	CWA31502 (25 μ F , 370V)	0
30	HOLDER CAPACITOR	1	CWH30057	←	
31	CAPACITOR - FAN MOTOR	1	CWA31602 (1.2 μ F, 400V)	←	0
32	ELECTROMAGNETIC SWITCH	2	CWA00059	←	0
33	TERMINAL BOARD ASS'Y	1	CWA4711012	←	
34	TEMPERATURE RELAY	1	CWA14C1001	←	0
35	CABINET ASS'Y	1	CWE00K330A	←	
36	CABINET FRONT PLATE	1	CWE06C117A	←	
37	CONTROL BOARD COVER	1	CWH13C286	←	
38	HANDLE	1	CWE16037C	←	
39	SOUND PROOF MATERIAL	1	CWG30478	←	
40	DRAIN HOSE	1	CWH5850080	←	

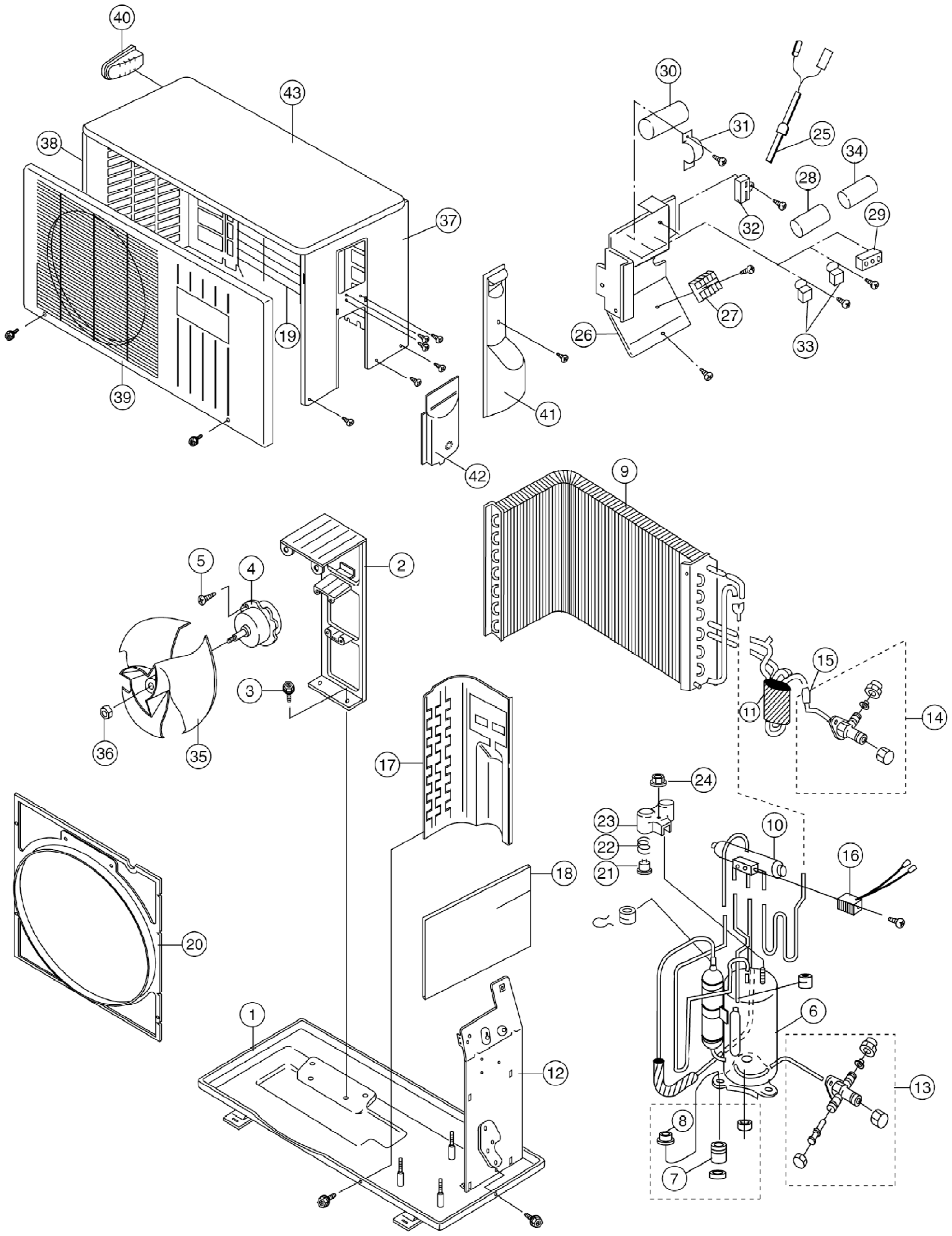
(Note)

- All parts are supplied from MACC, Malaysia (Vendor Code: 086).

- "O" marked parts are recommended to be kept in stock.

19. Exploded View

CU-A123KR



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Note:
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

20. Replacement Parts List

<Model: CU-A123KR>

NO.	DESCRIPTION & NAME	Q'TY	CU-A123KR	REMARKS
1	CHASSY ASS'Y	1	CWD50K659A	
2	FAN MOTOR BRACKET	1	CWD54254	
3	SCREW - FAN MOTOR BRACKET	2	CWH55189	
4	FAN MOTOR	1	CWA95381	0
5	SCREW - FAN MOTOR MOUNT	4	CWH55406	
6	COMPRESSOR	1	2KS224D5CA02	0
7	ANTI - VIBRATION BUSHING	3	CWH50055	
8	NUT - COMPRESSOR MOUNT	3	CWH4582065	
9	CONDENSER	1	CWB32C336	
10	4-WAY VALVE	1	CWB00003	0
11	TUBE ASS'Y (CHECK VALVE / CAPILLARY)	1	CWT01C652	
12	HOLDER COUPLING ASS'Y	1	CWH35K063	
13	3-WAY VALVE	1	CWB01480	0
14	2-WAY VALVE	1	CWB02308	0
15	STRAINER	1	CWB11025	
16	V - COIL COMPLETE	1	CWA43C2008	0
17	SOUND PROOF BOARD	1	CWH15288	
18	SOUND PROOF MATERIAL	1	CWG30911	
19	WIRE NET	1	CWD04197A	
20	AIR GUIDER PROPELLER FAN	1	CWD31138	
21	OVERLOAD PROPECTOR	1	CWA12360	0
22	HOLDER - O.L.P.	1	CWH7041200	
23	TERMINAL COVER	1	CWH17006	
24	NUT - TERMINAL COVER	1	CWH7080300	
25	TEMPERATURE RELAY	1	CWA14C1001	0
26	CONTROL BOARD	1	CWH10972	
27	TERMINAL BOARD ASS'Y	1	CWA28K216	
28	ELECTROLYTIC CAPACITOR	1	CWA32C045	0
29	TERMINAL BOARD ASS'Y	1	CWA4711012	
30	CAPACITOR - COMPRESSOR	1	CWA31647 (30 μF, 370V)	0
31	HOLDER CAPACITOR	1	CWH30057	
32	CAPACITOR - FAN MOTOR	1	CWA31604 (1.5 μF, 400V)	0
33	ELECTROMAGNETIC SWITCH	2	CWA00059	0
34	ELECTROLYTIC CAPACITOR	1	CWA32C067	0
35	PROPELLER FAN ASS'Y	1	CWH00K087	
36	NUT - PROPELLER FAN	1	CWH56053	
37	CABINET SIDE PLATE (RIGHT)	1	CWE04217A	
38	CABINET SIDE PLATE (LEFT)	1	CWE04220A	
39	CABINET FRONT PLATE	1	CWE06K104A	
40	HANDLE	1	CWE16037C	
41	CONTROL BOARD COVER	1	CWH13461	
42	PLATE FOR CONTROL BOARD COVER	1	CWD91258	
43	CABINET TOP PLATE	1	CWE03K035A	

(Note)

- All parts are supplied from MACC, Malaysia (Vendor Code: 086).

- "O" marked parts are recommended to be kept in stock.

21. Electronic Parts List

<Electronic Controller Part No.: CWA742209, CWA742210>

SYMBOL	DESCRIPTION & NAME	PART NO.
BZ1	SOUND GENERATOR	A48040
CT1	TRANSFORMER	A40322
D1	DIODE	A541SR154-4
D2	DIODE	A54RB501V-40
D3	DIODE	A541SS355T
DB1	DIODE	A54CS1VB20E
FUSE	FUSE	XBA2C20TR0
FUSE HOLDER	FUSE HOLDER	XCSCW032
IC1	INTEGRATED CIRCUIT	A52D0022G510
IC2	INTEGRATED CIRCUIT	A52BR9020F
IC3	INTEGRATED CIRCUIT	A52A2003GR2
IC4	INTEGRATED CIRCUIT	A52C040
IC5	INTEGRATED CIRCUIT	A52C114
Q1	TRANSISTOR	A55DC114EKTX
Q2, Q3	TRANSISTOR	A55C2412KTX
Q4	TRANSISTOR	A55D1484K
Q5 - Q8	TRANSISTOR	A55DC143XKTX
RY-HOT	ELECTRO MAGNETIC RELAY	A00161
RY-PWR	ELECTRO MAGNETIC RELAY	A00106
RY-SHi, RY-Hi, RY-M	ELECTRO MAGNETIC RELAY	A00160
SSR1, SSR2	TYRISTOR	A56W2DEH1-5
SW1	SLIDE SWITCH	A04085
SW2, SW3	PUSH SWITCH	A01059
T1	TRANSFORMER	A40366
X1	RESONATOR	A45CST4.09MG
ZD1	DIODE	A54D7.5MT1B
ZNR1, ZNR2, ZNR3	DIODE	ERZVEAV511
C-FM	SH CAPACITOR	A31698
TEMP FUSE	TEMPERATURE FUSE	A16C204
HOT (RED)	CURRENT TRANSFORMER	A28069T
CR1, CR2, CR3, CR4, CR5	SURGE ABSORBER	A59014

Note

- All parts are supplied from MACC, Malaysia (Vendor Code: 086)

22. Electronic Circuit Diagram

Fig. 1

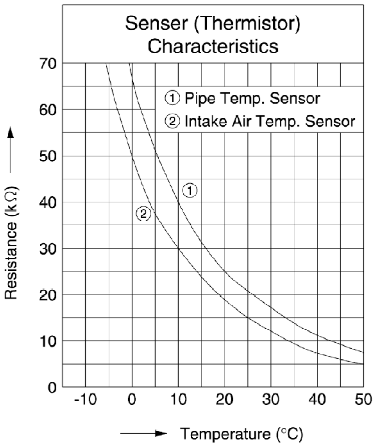


Fig. 2

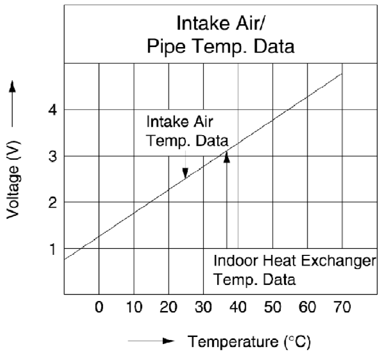
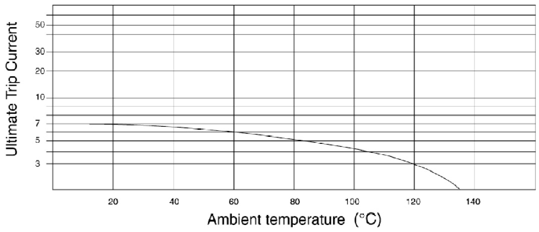
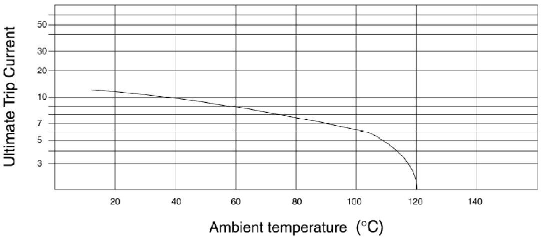


Fig. 3 OLP Characteristics (Compressor)

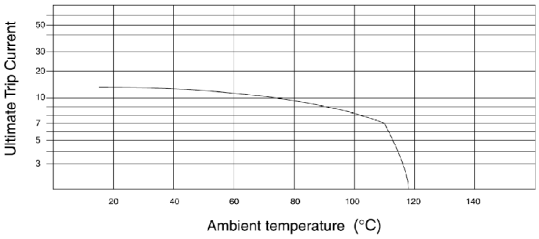
CS/CU-A73KR (CWA12345)



CS/CU-A93KR (CWA12346)



CS/CU-A123KR (CWA12360)



How to use electronic circuit diagram

Before using the circuit diagram, read the following carefully.

* Voltage measurement

Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer.

Use them for servicing.

Voltage indication is in Red at all operations.

	Intake air temperature	Temperature setting	Discharge air temperature	Pipe temperature
Cooling	27°C	16°C	17°C	15°C

* Indications for resistance

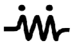
a. K....kΩ M....MΩ

W...watt Not indicated....1/4W

b. Type

Not indicated..........carbon resister

Tolerance±5%

..........metal oxide resister

Tolerance±1%

* Indications for capacitor

a. Unit μ....μF P....pF

b. Type Not indicated....ceramic capacitor

(S)...........S series aluminium electrolytic capacitor

(Z)...........Z series aluminium electrolytic capacitor

(SU)........SU series aluminium electrolytic capacitor

(P)...........P series polyester system

(SXE)......SXE series aluminium electrolytic capacitor

(SRA)......SRA series aluminium electrolytic capacitor

(KME)......KME series aluminium electrolytic capacitor

* Diode without indication.............MA165

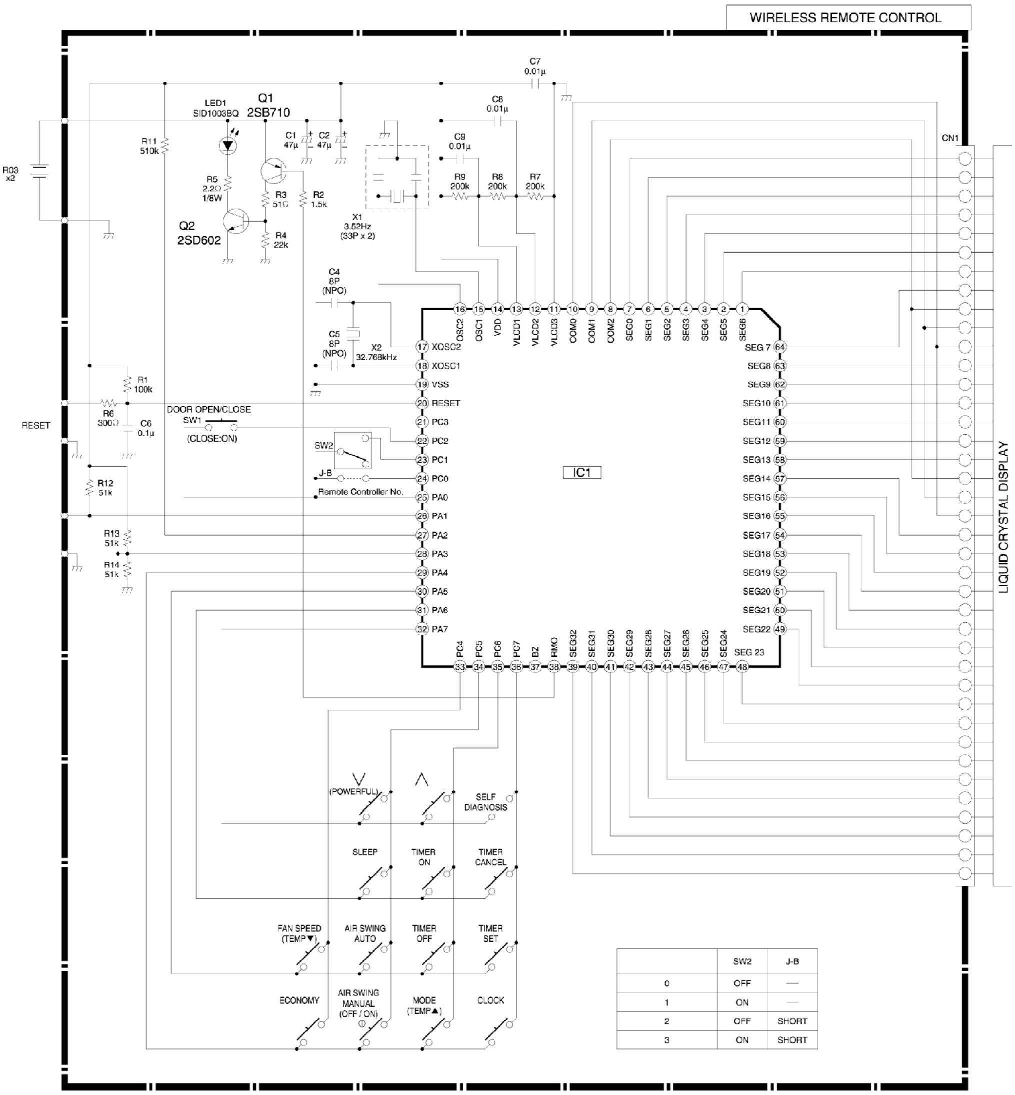
※ Circuit Diagram is subject to change without notice for further development.

TIMER TABLE

Name		Time	Test mode (When test point Short-circuited)	Remarks
Sleep Mode Waiting		1 hr.	6 sec.	
Sleep Mode Operation		8 hrs.	48 sec.	
Real Timer		1 hr.	1 min.	
		10 min.	10 sec.	
		1 min.	1 sec.	
Time Delay Safety Control		2 min. 58 sec.	0 sec.	
Forced Operation		60 sec.	0 sec.	
Time Save Control		7 min.	42 sec.	
Anti-Freezing		4 min.	0 sec.	
Mode Judgement		20 sec.	0 sec.	
Soft	OFF	6 min.	36 sec.	
	ON	10 min.	60 sec.	SOFT DRY : 10 min. operation
Deodorizing Control	Cooling	40 sec.	4 sec.	
		70 sec.	7 sec.	
		20 sec.	2 sec.	
	Soft Dry	180 sec.	18 sec.	
		40 sec.	4 sec.	
		360 sec.	36 sec.	
Comp. Reverse Rotation Detection		5 min.	30 sec.	Comp. ON 5 min. and above
		2 min	0 sec.	
Comp./ Fan Motor Delay Timer		1.6 sec.	0 sec.	
SLo Timer		8 sec.	8 sec.	

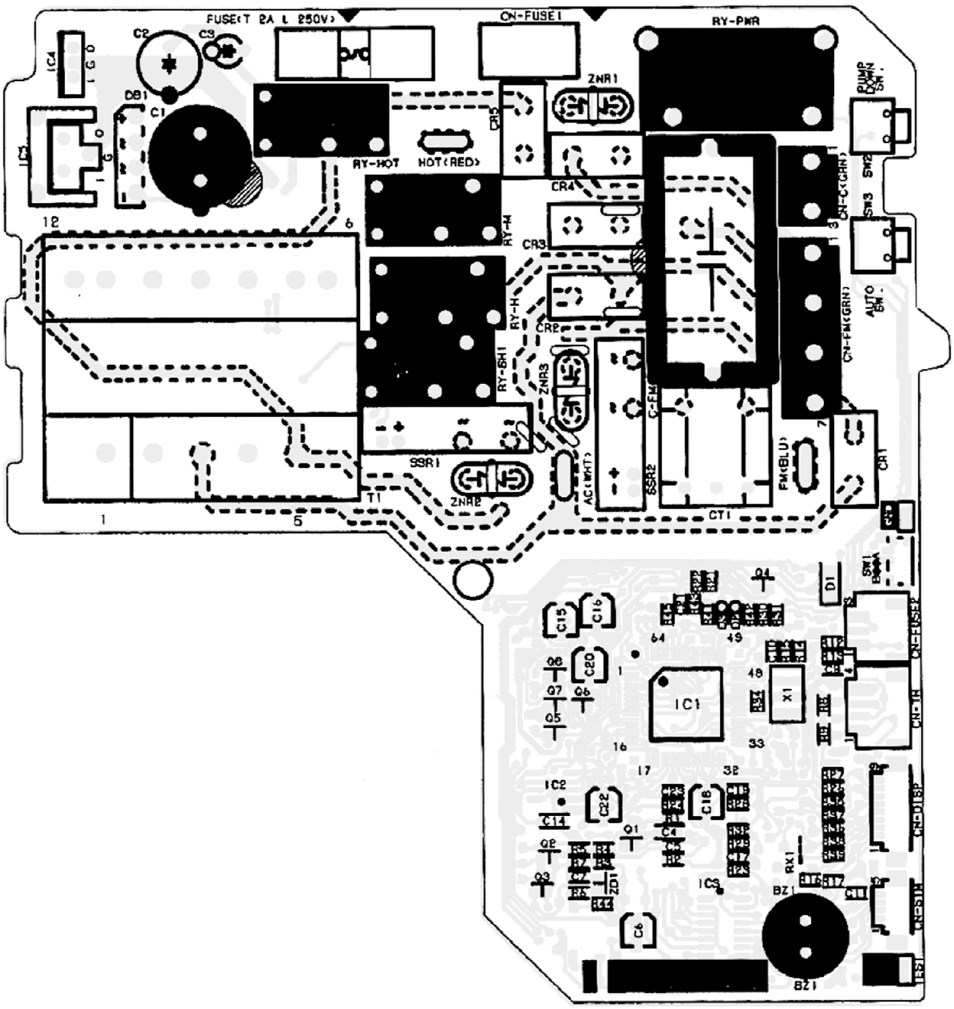
Name	Time	Test mode (When test point Short-circuited)	Remarks
Intake Air Anti-Freezing Prevention	16 min.	96 sec.	
POWERFUL MODE	15 min.	15 sec	
Random FM Timer (ECONOMY Mode)	5 sec.	5 sec.	
Random Auto Restart Control	0 ~ 150 sec.	0 sec.	

22.1. REMOTE CONTROL

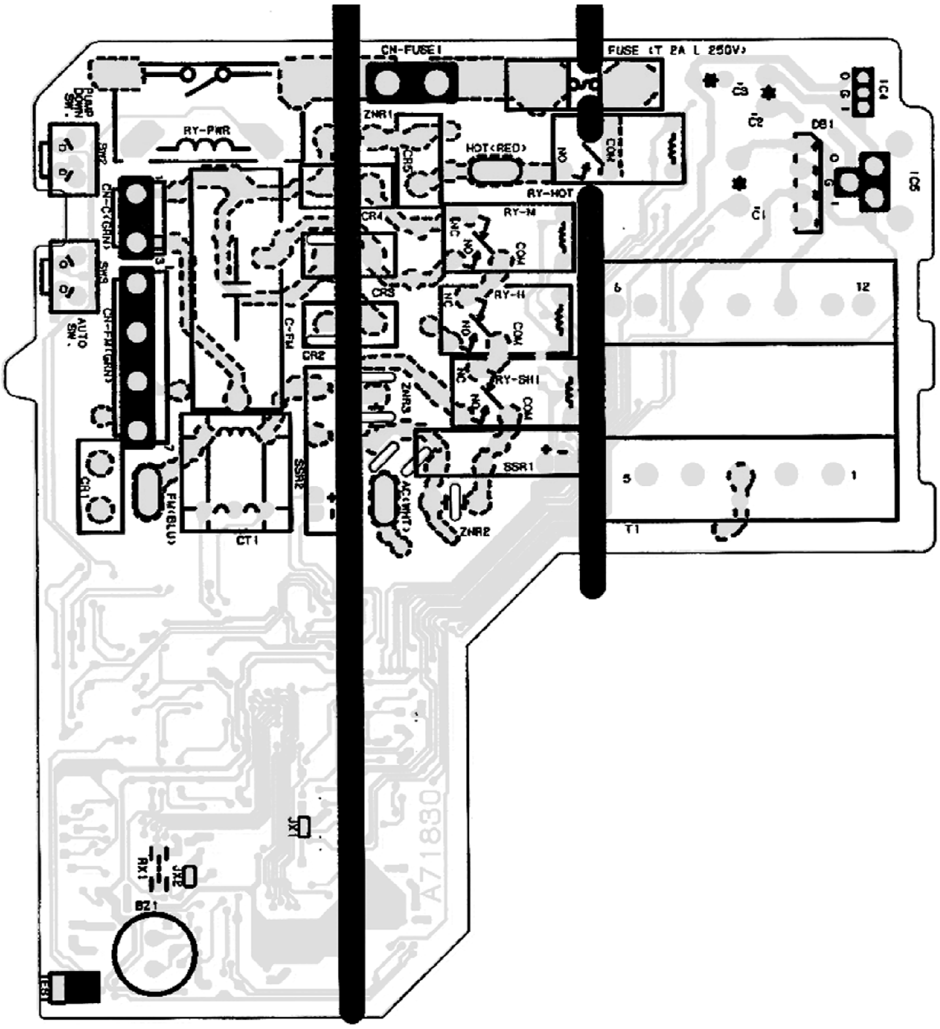

WIRELESS REMOTE CONTROL
C7 0.01µ
C8 0.01µ
C9 0.01µ
LED1 SID1003BQ
Q1 2SB710
Q2 2SD602
R11 510k
R03 x2
R5 2.2Ω 1/8W
R3 51Ω
R2 1.5k
R4 22k
C1 47µ
C2 47µ
X1 3.52Hz (33P x 2)
R9 200k
R8 200k
R7 200k
C4 8P (NPO)
C5 8P (NPO)
X2 32.768kHz
R1 100k
R6 300Ω
C6 0.1µ
RESET
DOOR OPEN/CLOSE
SW1
(CLOSE:ON)
SW2
J-B
Remote Controller No.
R12 51k
R13 51k
R14 51k
IC1
16 OSC2
15 OSC1
14 VDD
13 VLCD1
12 VLCD2
11 VLCD3
10 COM0
9 COM1
8 COM2
7 SEG0
6 SEG1
5 SEG2
4 SEG3
3 SEG4
2 SEG5
1 SEG6
17 XOSC2
18 XOSC1
19 VSS
20 RESET
21 PC3
22 PC2
23 PC1
24 PC0
25 PA0
26 PA1
27 PA2
28 PA3
29 PA4
30 PA5
31 PA6
32 PA7
SEG 7 64
SEG8 63
SEG9 62
SEG10 61
SEG11 60
SEG12 59
SEG13 58
SEG14 57
SEG15 56
SEG16 55
SEG17 54
SEG18 53
SEG19 52
SEG20 51
SEG21 50
SEG22 49
SEG 23
33 PC4
34 PC5
35 PC6
36 PC7
37 BZ
38 RMO
39 SEG32
40 SEG31
41 SEG30
42 SEG29
43 SEG28
44 SEG27
45 SEG26
46 SEG25
47 SEG24
48
CN1
LIQUID CRYSTAL DISPLAY
∨ (POWERFUL)
∧
SELF DIAGNOSIS
SLEEP
TIMER ON
TIMER CANCEL
FAN SPEED (TEMP▼)
AIR SWING AUTO
TIMER OFF
TIMER SET
ECONOMY
AIR SWING MANUAL (OFF / ON)
MODE (TEMP▲)
CLOCK

	SW2	J-B
0	OFF	—
1	ON	—
2	OFF	SHORT
3	ON	SHORT

22.2. PRINT PATTERN / INDOOR UNIT PRINTED CIRCUIT BOARD / / / TOP VIEW


FUSE(T 2A L 250V)
CN-FUSE1
RY-PWR
IC4
I G O
C2
C3
DB1
C1
IC3
O G I
RY-HOT
HOT(RED)
CR5
ZNR1
PUMP DOWN SW.
SW2
CN-C(GRN)
SW3
AUTO SW.
CN-FM(GRN)
CR4
RY-H
CR3
RY-H
CR2
RY-SH1
ZNR3
C-FM
12
6
1
5
T1
SSR1
ZNR2
AC(WHT)
SSR2
CT1
FM(BLU)
CR1
7
D1
SW1
Q4
CN-FUSE2
C15
C16
64
49
Q8
C20
Q7
Q6
Q5
1
48
IC1
X1
CN-TH
16
33
17
32
IC2
C22
C18
C14
Q1
C4
Q2
Q3
ZD1
RX1
IC3
BZ1
CN-DISP
CN-STM
C6
BZ1

22.3. PRINT PATTERN / INDOOR UNIT PRINTED CIRCUIT BOARD / / / BOTTOM VIEW


CN-FUSE1
FUSE (T 2A L 250V)
PUMP DOWN SW.
SW2
RY-PWR
ZNR1
CR5
HOT(RED)
NO
COM
RY-HOT
IC4
IC5
C3
C2
C1
DB1
CN-C(GRN)
CR4
RY-M
NC
NO
COM
SW3
AUTO SW.
CN-FM(GRN)
C-FM
CR3
CR2
RY-H
RY-SHI
ZNR3
SSR2
SSR1
6
12
5
1
T1
CN1
FM(BLU)
CT1
AC(WHT)
ZNR2
JX1
JX2
RX1
BZ1
A71830

[MACC] Printed in Malaysia /

Remote Control

COOL
25
°C
TEMP
OFF/ON
POWERFUL
Panasonic

OFF / ON ⏻

Operation OFF / ON

MODE

Operation Mode Selection

AUTO	Automatic Operation Mode
HEAT	Heating Operation Mode
COOL	Cooling Operation Mode
DRY	Soft Dry Operation Mode

FAN SPEED

Indoor Fan Speed Selection

✇ ✥ ✻ ▮	Low Speed
✇ ✥ ✻ ▮▮▮	Medium Speed
✇ ✥ ✻ ▮▮▮▮▮	High Speed
AUTO FAN	Automatic Fan Speed

AIR SWING

Airflow Direction Control

AUTO	Automatic Airflow Direction Control
MANUAL	Airflow Direction Manual Control

POWERFUL

Powerful Mode Operation OFF/ON

ECONOMY

Economy Mode Operation OFF/ON

TEMP.

Room Temperature Setting

- Temperature Setting (16°C to 30°C)
- Automatic Operation

▲ HI AUTO	Operation with 2°C higher than standard temperature.
AUTO	Operation with standard temperature.
AUTO ▼ Lo	Operation with 2°C lower than standard temperature.

ON-TIMER
OFF-TIMER

Timer Operation Selection

- 24-hour, OFF / ON Real Timer Setting.

TIMER

Time / Timer Setting

- Hours and minutes setting.

SET
CANCEL

Timer Operation Set / Cancel

- ON Timer and OFF Timer setting and cancellation.

CLOCK

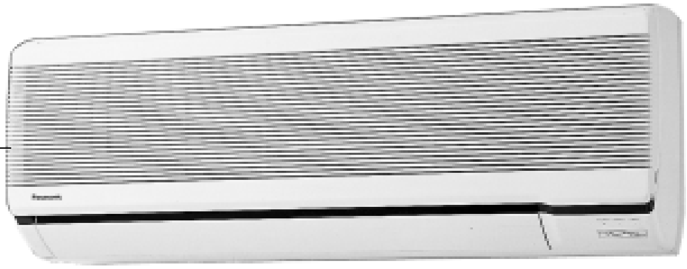
Clock Setting

- Current time setting.

SLEEP

Sleep Mode Operation OFF / ON

Indoor Unit



POWER ⏀

Power Switch OFF / ON

AUTO
OFF / ON

Auto Operation Button

- Used when the remote control cannot be used.

Remote Control Signal Receiving Sound

- It can be controlled by pressing Auto Operation Button for 10 seconds.

TEST RUN
OFF / ON

Operation Test Running / Pump Down Switch

- Used when test running or servicing.

Operation Indication Lamps (LED)

• POWER (Red)......	Lights up in operation, blinks in Automatic Operation Mode judging
• SLEEP (Orange).....	Lights up in Sleep Mode Operation
• TIMER (Orange).....	Lights up in Timer Setting
• POWERFUL (Orange)....	Lights up in Powerful Mode Operation
• ECONOMY (Green).....	Lights up in Economy Mode Operation

Operation Mode

- Heating, Cooling, Soft Dry and Automatic Mode.

Powerful Operation

- Reaches the desired room temperature quickly.

Economy Operation

- To reduce electrical power consumption.

Random Auto Restart Control

- Operation is restarted randomly after power failure at previous setting mode.

Anti-Freezing Control

- Anti-Freezing control for indoor heat exchanger. (Cooling and Soft Dry)

Sleep Mode Auto Control

- Indoor Fan operates at low speed.
- Operation stops after 8 hours.

Indoor Fan Speed Control

- High, Medium and Low.
- Automatic Fan Speed Mode

– Heating : Fan speed varies from Me → SLo in accordance with indoor heat exchanger.
– Cooling : Fan rotates at Hi and Me speed. Deodorizing control is available.
– Soft Dry : Fan rotates at SLo speed. Deodorizing control is available.

Airflow Direction Control

- Automatic air swing and manual adjusted by remote control for vertical airflow.
- Manually adjusted by hand for horizontal airflow.

Starting Current Control

Time Delay Safety Control

- Restarting is inhibited for approximately 3 minutes (Cooling) or 4 minutes (Heating).

7 Minutes Time Save Control

- Cooling Operation only.

30 Minutes Time Save Control

- Heating Operation only.

Hot-Start Control

- The indoor fan remain stop until the indoor heat exchanger temperature reaches 30°C.
- The indoor fan will operate at SLo and Lo⁻ when indoor heat exchanger temperature reaches 30°C - 39°C

Anti Cold Draft Control

- The indoor fan operates at SSLo when the indoor heat exchanger temperature is low.

Outdoor Unit

CU-A73KR / CU-A93KR

CU-A123KR

Compressor Reverse Rotation Protection Control

- To protect compressor from reverse rotation when there is a instantaneous power failure.

Overload Protector

- 2-Stage OLP to protect the compressor. Overload Protector will trip when
  - Temperature of compressor increases to 120°C.
  - High temperature or high current flows to compressor.
    (Refer circuit diagram for OLP characteristic)

60 Secs. Forced Operation Control

- Once the compressor is activated, it does not stop within the first 60 secs. However, it stops immediately with remote control stop signal.

Outdoor Fan Operation Control

- Inner protector.

Deice Control

- To prevent frosting at outdoor heat exchanger. (Only for Heating Operation)
- Temperature of outdoor heat exchanger is sensed by TRS (Thermal Reed Switch).

Overload Protection Control

- Outdoor fan stops when indoor heat exchanger temperature rises to 51°C and above, and restarts when the indoor heat exchanger temperature drops to 49°C and below.
- Compressor stop when indoor heat exchanger temperature reaches 65°C or above. (Heating Operation Only)

Compressor Protection Control

- If the outdoor fan motor is not running after compressor starts for 50 secs., compressor will stop. (Cooling and Soft Dry Operation only)

4-Way Valve Control

- When the unit is switched to "OFF" during Heating Operation, 4-way valve stays at Heating position for 5 minutes.

Outdoor Fan Motor Control

SAFETY PRECAUTIONS

Before operating, please read the following “Safety Precautions” carefully.

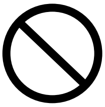
To prevent personal injury, injury to others and property damage, the following instructions must be followed.

- Incorrect operation due to failure to follow instructions will cause harm or damage, the seriousness of which is classified as follows:

⚠ Warning
This sign warns of death or serious injury.

⚠ Caution
This sign warns of damage to property.

- The instructions to be followed are classified by the following symbols:



This symbol (with a white background) denotes an action that is PROHIBITED.

These symbols (with a black background) denote actions that are COMPULSORY.

Installation Precautions

⚠ Warning

- **Do not install, remove and reinstall the unit yourself.**
  Improper installation will cause leakage, electric shock or fire. Please consult an authorized dealer or specialist for the installation work.

⚠ Caution

- **This room air conditioner must be earthed.**

  ❗ Improper grounding could cause electric shock.

- **Do not install the unit in a place where there may be explosive gas leaks.**

  ⊘ Gas leaks near the unit could cause fires.

- **Ensure that the drainage piping is connected properly.**

  ❗ Otherwise, water will leak out.

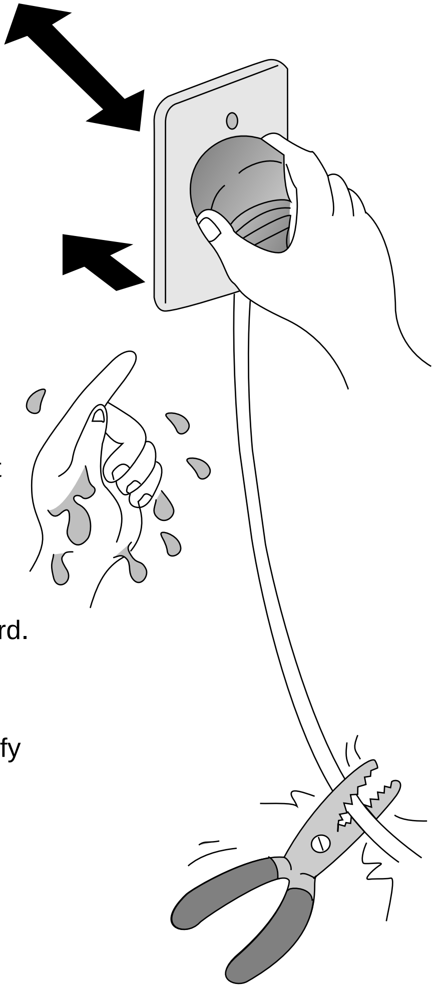
Operation Precautions

⚠ Warning

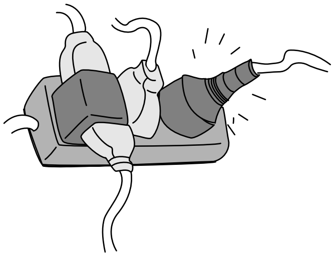
This sign warns of death or serious injury.

Do not insert plug to operate the unit.
Do not pull out plug to stop the unit.

Plug in properly.



Do not share outlet.

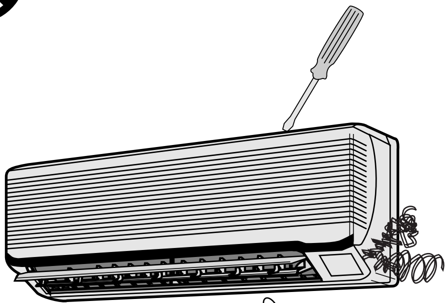


Do not operate with wet hands.

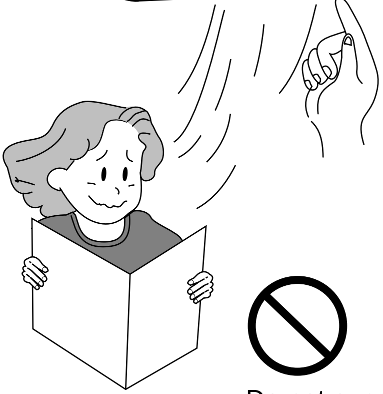
Use specified power cord.

Do not damage or modify the power cord.

Do not repair by yourself.

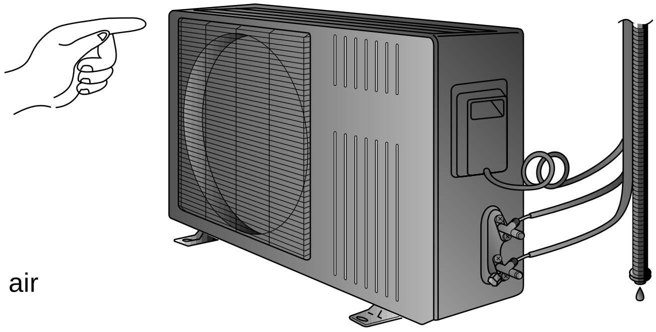


If abnormal condition (burnt smell, etc) occurs, switch off and unplug the power supply.



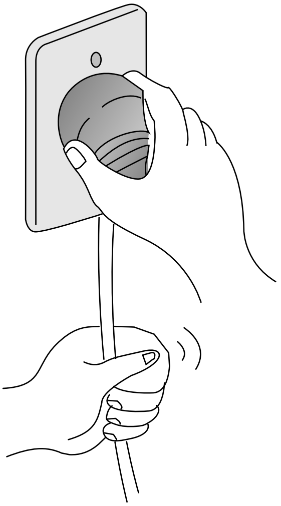
Do not exposed directly to cool air for a long period.

Do not insert finger or other objects into the indoor or outdoor units.



⚠ Caution

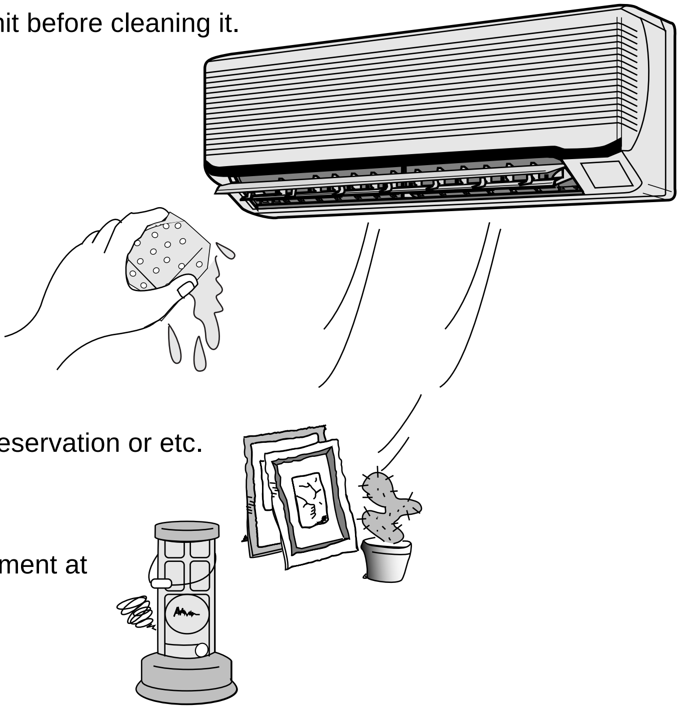
This sign warns of injury.



Switch off the power supply if the unit is not used for a long period.

⃠ Do not pull the cord to disconnect the plug.

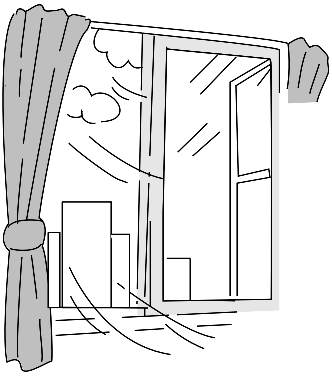
❗ Switch off the unit before cleaning it.



⃠ Do not wash the unit with water.

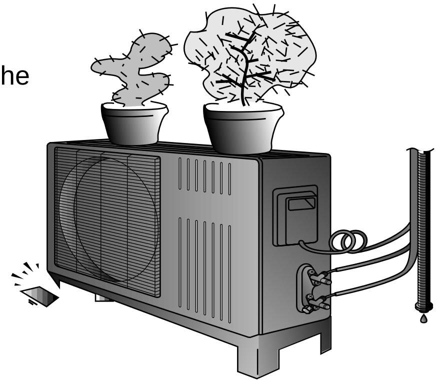
⃠ Do not use for other purpose such as preservation or etc.

⃠ Do not use any combustible equipment at airflow direction.



❗ Ventilate the room regularly.

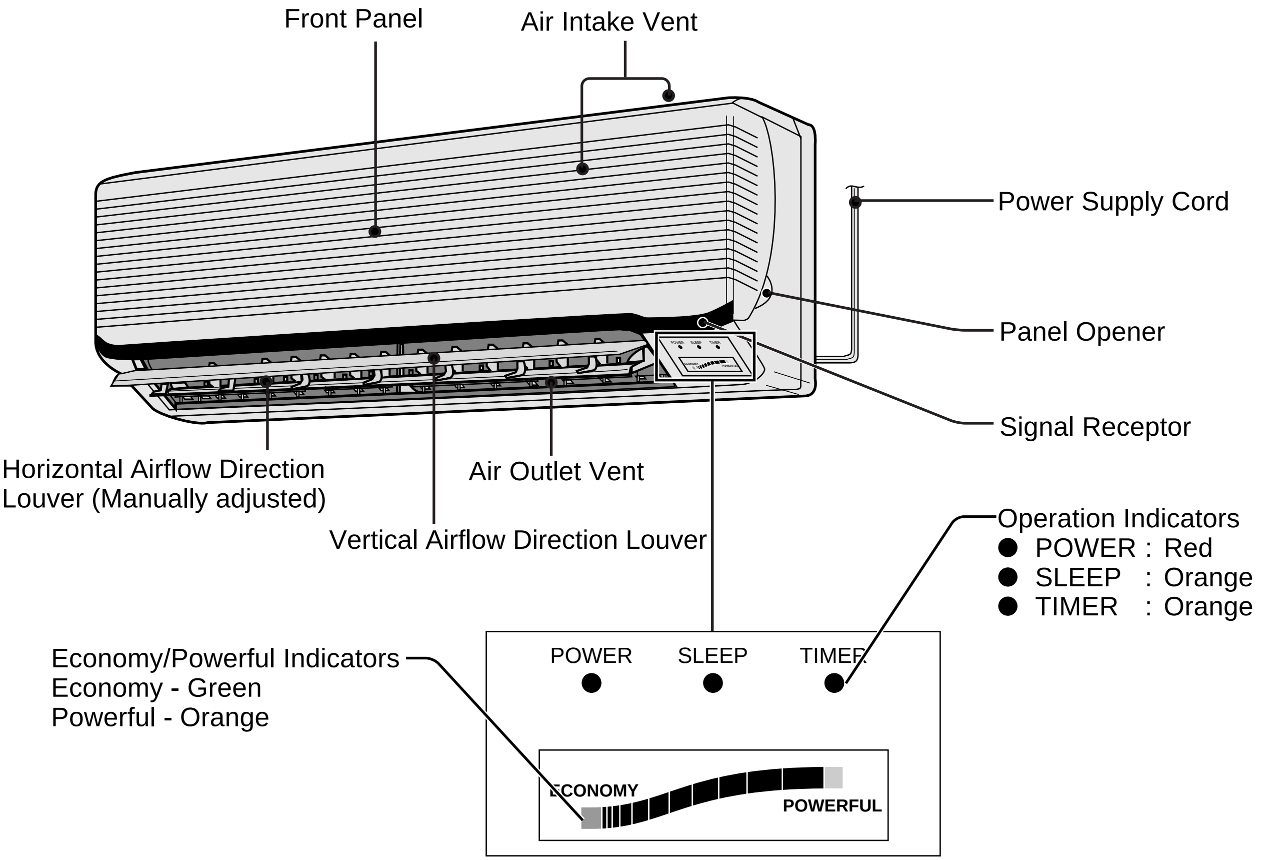
⃠ Do not sit or place anything on the outdoor unit.



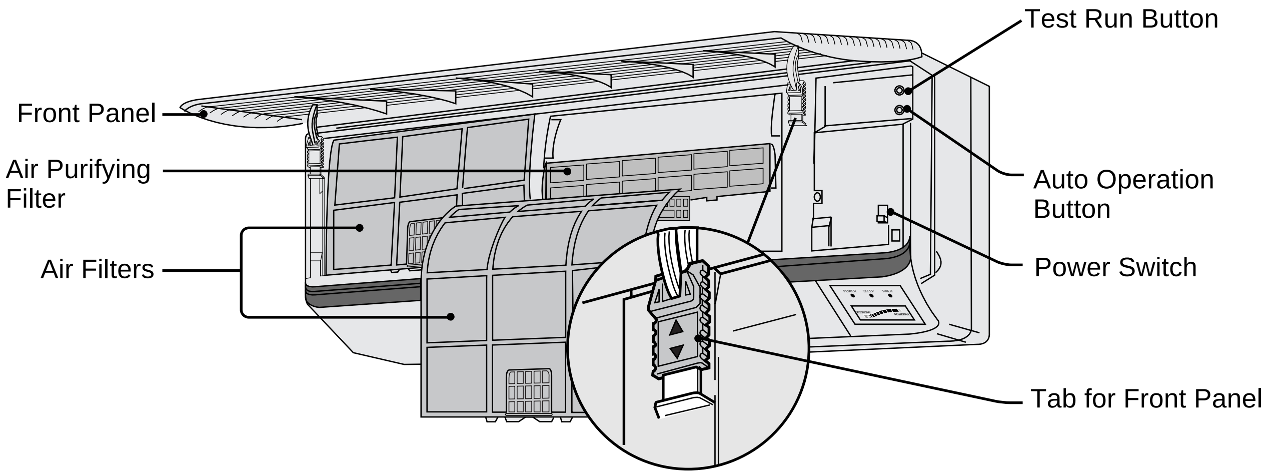
❗ Pay attention as to whether the installation rack is damaged due to long period of usage.

NAME OF EACH PART

● Indoor Unit

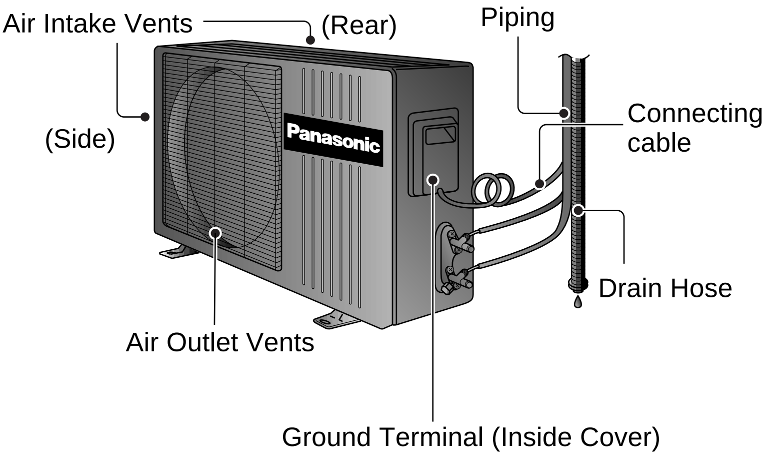

Front Panel
Air Intake Vent
Power Supply Cord
Panel Opener
Signal Receptor
Horizontal Airflow Direction Louver (Manually adjusted)
Air Outlet Vent
Vertical Airflow Direction Louver
Operation Indicators
● POWER : Red
● SLEEP : Orange
● TIMER : Orange
Economy/Powerful Indicators
Economy - Green
Powerful - Orange
POWER
SLEEP
TIMER
ECONOMY
POWERFUL

■ When the front panel is opened

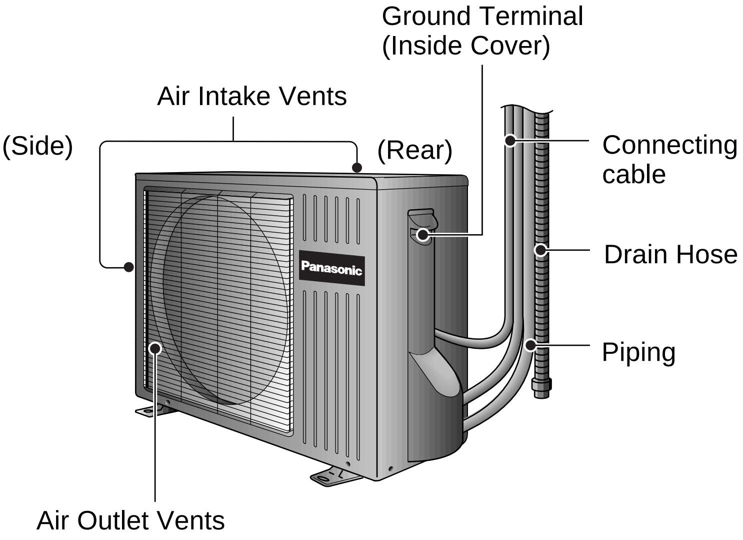

Test Run Button
Front Panel
Air Purifying Filter
Auto Operation Button
Air Filters
Power Switch
Tab for Front Panel

Outdoor Unit

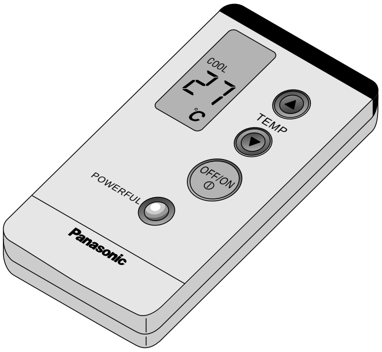
CU-A73KR
CU-A93KR


Air Intake Vents
(Rear)
Piping
(Side)
Panasonic
Connecting cable
Drain Hose
Air Outlet Vents
Ground Terminal (Inside Cover)

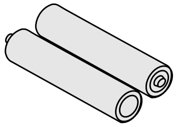
CU-A123KR


Ground Terminal (Inside Cover)
Air Intake Vents
(Side)
(Rear)
Connecting cable
Panasonic
Drain Hose
Piping
Air Outlet Vents

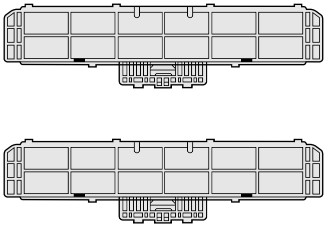
Accessories


COOL
27
°C
TEMP
OFF/ON
POWERFUL
Panasonic

Remote Control

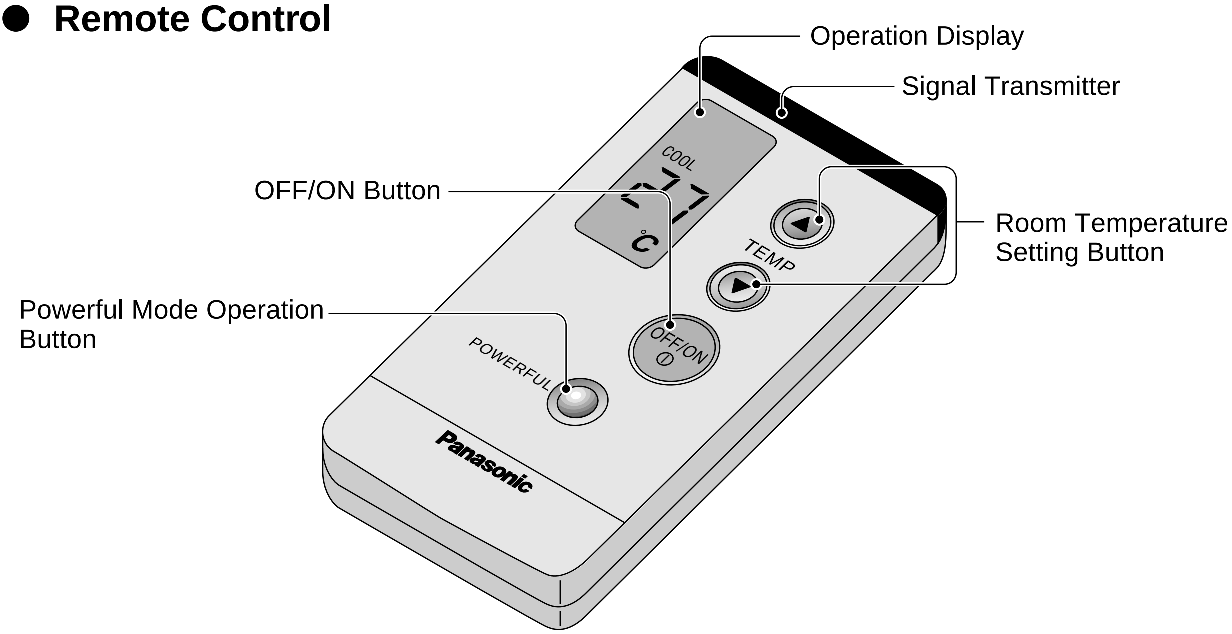


Two AAA dry-cell batteries or equivalent

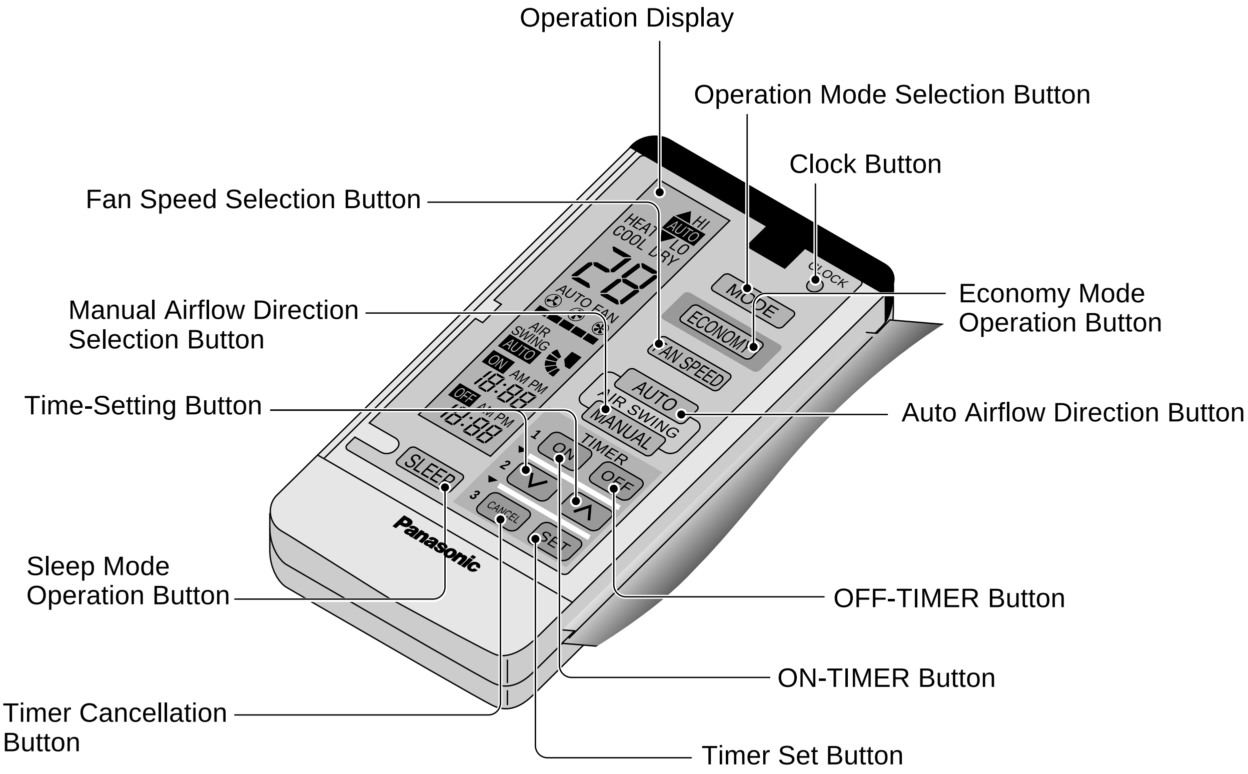


Air Purifying Filters
(with deodorizing function)

● Remote Control


Operation Display
Signal Transmitter
OFF/ON Button
Room Temperature Setting Button
Powerful Mode Operation Button
COOL
°C
TEMP
OFF/ON
POWERFUL
Panasonic

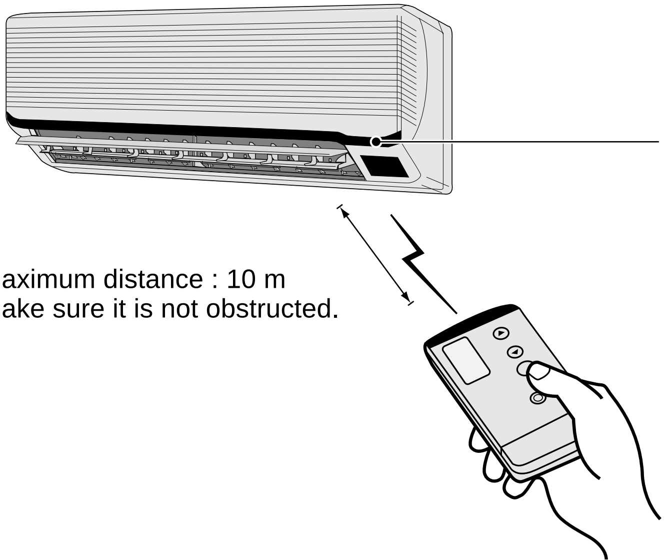
■ When the remote control cover is opened


Operation Display
Operation Mode Selection Button
Clock Button
Fan Speed Selection Button
Economy Mode Operation Button
Manual Airflow Direction Selection Button
Time-Setting Button
Auto Airflow Direction Button
Sleep Mode Operation Button
OFF-TIMER Button
ON-TIMER Button
Timer Cancellation Button
Timer Set Button
HEAT
COOL
DRY
HI
AUTO
LO
AUTO FAN
AIR SWING
ON
OFF
AM PM
MODE
CLOCK
ECONOMY
FAN SPEED
AUTO
AIR SWING
MANUAL
TIMER
SLEEP
CANCEL
SET
Panasonic

How to use the remote control

Notes

- Do not throw or drop
- Do not get it wet
- Certain type of flourescent lamps may affect signal reception. Consult your dealer.



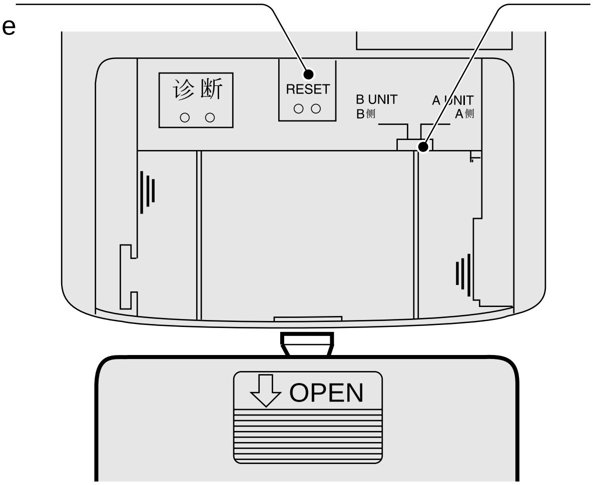
Signal receptor

- Signal received sound.
  One short beep or one long beep.

- Maximum distance : 10 m
- Make sure it is not obstructed.

- Aim at the signal receptor.

When the back cover is opened



Reset points

- short to clear the memory

Signal [B ↔ A] switch

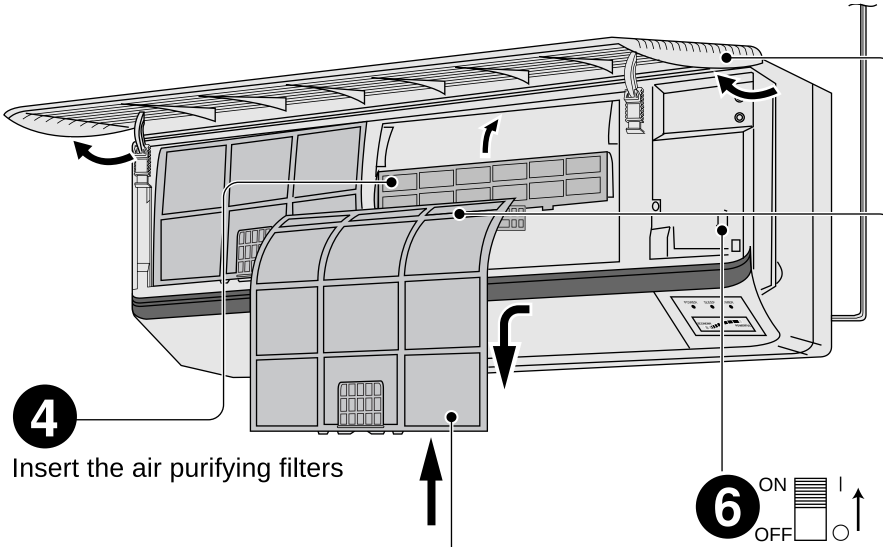
- Used when 2 or more units are installed in 1 room. (Consult your dealer)
- Set to A. (If one unit is installed)

PREPARATION BEFORE OPERATION

● Indoor Unit

⚠ Warning

- ■ **Ensure the power plug is securely inserted.**
  A loose plug may cause a fire or an electric shock.



❶ Connect the power supply cord to an independent power supply

❷ Open the front panel

❸ Remove the air filters

❹ Insert the air purifying filters

❺ Insert the air filters

❻ Switch on the power switch

❼ Close the front panel

■ Notes

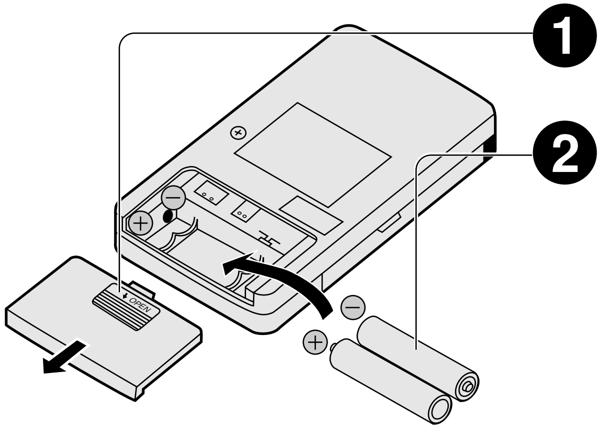
- If the unit is not going to be used for an extended period of time, turn off the Power switch. If it is left at the ON position, approximately 2.5 W of electricity will be used even if the main unit has been turned off with the remote control.
- If operation is stopped, then restart immediately, the unit will resume operation only after 3 minutes.

Use under the following conditions (Unit in °C)

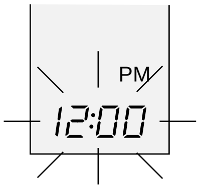
DBT: Dry Bulb Temp WBT:Wet Bulb Temp	Cooling				Heating			
	Indoor		Outdoor		Indoor		Outdoor	
	DBT	WBT	DBT	WBT	DBT	WBT	DBT	WBT
Maximum Temperature	32	23	43	26	30	–	24	18
Minimum Temperature	16	11	16	11	16	–	-5	-6

● Remote Control

■ Inserting batteries



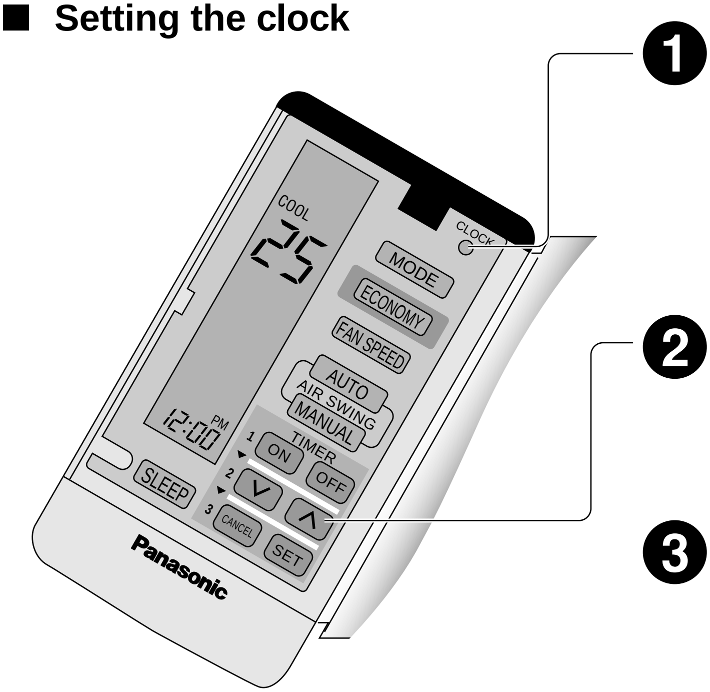
1. OPEN Slide the cover to open
2. ⊕ ⊖ **Be sure the directions are correct**



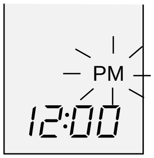
- Open the remote control cover and confirm the display 12:00 PM is flashing.

※ Set the current time (Clock) immediately to prevent battery exhaustion.

■ Setting the clock


COOL
25
PM
12:00
CLOCK
MODE
ECONOMY
FAN SPEED
AUTO
AIR SWING
MANUAL
TIMER
1
ON
OFF
2
3
CANCEL
SET
SLEEP
Panasonic

1. **Press the clock button**



← flashes

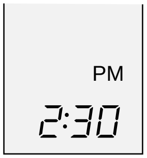
← lights up

2. **Press to set the current time**

∧ Press continuously for fast forwarding.

∨ Press continuously for fast reversing.

3. **Press the clock button**



← lights up

← lights up

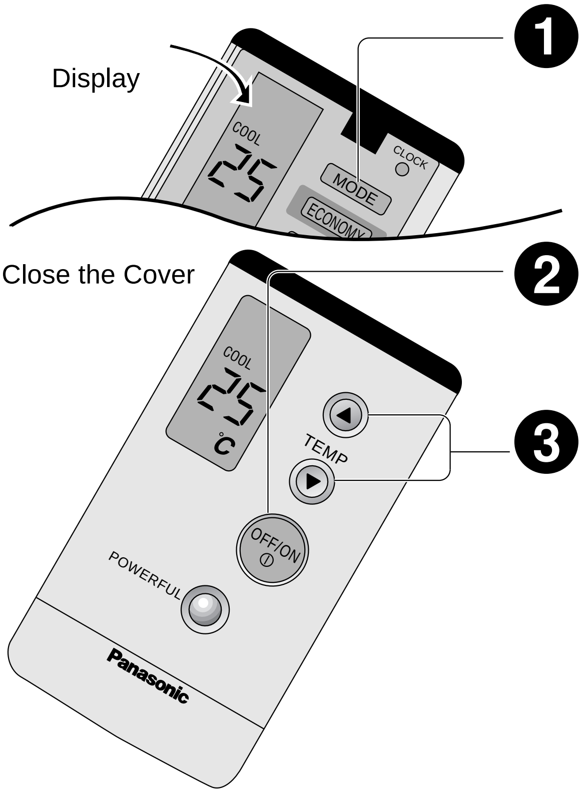
■ About the batteries

- Can be used for approximately one year.

Observe the following when replacing the batteries
- Replace with new batteries of the same type .
- Do not use rechargeable batteries (Ni-Cd).
- Remove the batteries if the unit is not going to be used for a long period.

HOW TO OPERATE

● Automatic, Cooling, Soft Dry, Fan


Display
COOL
25
CLOCK
MODE
ECONOMY
Close the Cover
COOL
25
°C
TEMP
OFF/ON
POWERFUL
Panasonic
1
2
3

1 Press to select the desired operation mode
When pressed, the display changes in this order.

COOL ➡ DRY ➡ FAN ➡ AUTO

2 Press to start the operation
POWER indicator LED (Red) on indoor unit will light up.
Press once more to stop operation.

3 Press to select room temperature

- **Automatic Operation**

Display

▲HI AUTO - Operation with 2°C higher than standard temperature.

AUTO - Operation with standard temperature.

AUTO ▼LO - Operation with 2°C lower than standard temperature.

- **Heating, Cooling, Soft Dry operation**

▲ Press to increase temperature by 1°C.

▼ Press to decrease temperature by 1°C.

– The temperature can be set between 16°C and 30°C.
– Recommended temperature
For Cooling: 20°C - 24°C
For Cooling: 26°C - 28°C
For Soft Dry:1°C - 2°C lower than room temperature.

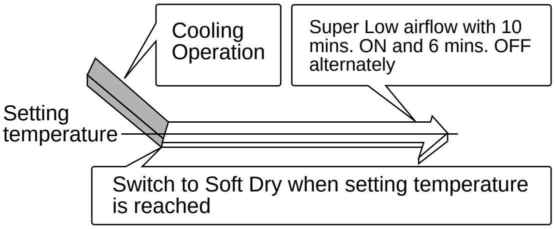
■ Operation details

AUTO – Automatic Operation

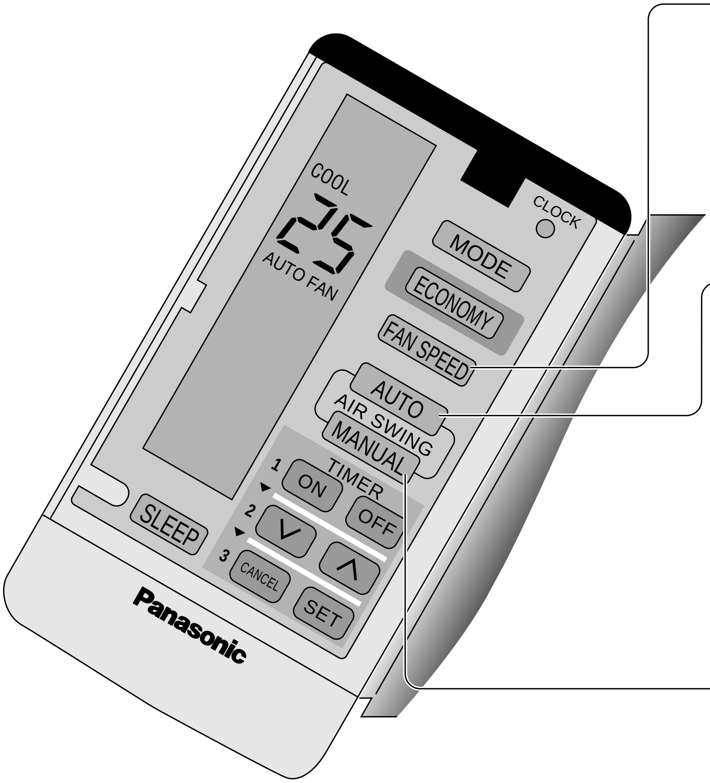
- At the start of the automatic operation, Heating, Cooling or Soft Dry is automatically selected according to the indoor temperature.
- The operation mode changes every hour, when necessary.
- Temperature is not displayed on remote control during Auto mode operation.

DRY – Soft Dry Operation

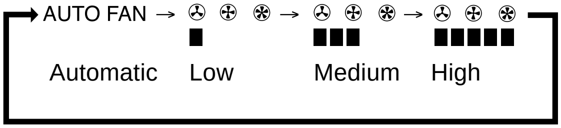
- A very gentle Cooling Operation. Consisting primarily of dehumidifying. It does not lower the room temperature.
- During Soft Dry operation, the indoor fan will operate and stop 4 seconds intervals.


Cooling Operation
Super Low airflow with 10 mins. ON and 6 mins. OFF alternately
Setting temperature
Switch to Soft Dry when setting temperature is reached

● Adjusting Airflow Direction And Fan Speed

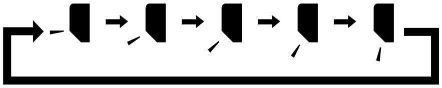

COOL
25
AUTO FAN
CLOCK
MODE
ECONOMY
FAN SPEED
AUTO
AIR SWING
MANUAL
TIMER
1
ON
OFF
2
3
SLEEP
CANCEL
SET
Panasonic

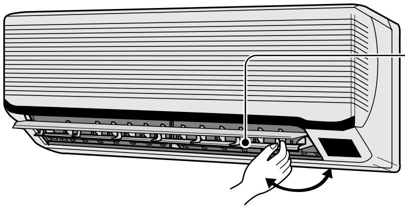
Press to select Fan speed
- The display changes in this order


AUTO FAN →
→
→
Automatic
Low
Medium
High

Selecting Vertical Airflow Direction
Press AUTO,
- Cooling and Soft Dry – The louver swing up and down automatically.
- Heating – When the discharge air temperature is low such as at the start of heating operation, the air blows at horizontal level.
  As the temperature rises, the hot air blows in a downwards direction.
- To stop the automatic airflow direction operation, press (MANUAL) button.

Press MANUAL
- Manual selection of Vertical Airflow Direction Louver.
- The display changes in this order,





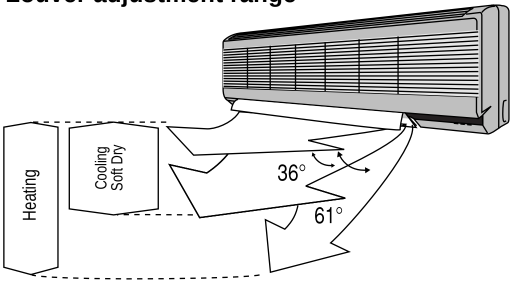
Horizontal Airflow Direction
- Adjust it manually.

■ Operation details

HEAT – Heating Operation
- Defrosing Operation
  Depend on the outdoor temperature, the operation occasionally stops to melt the frost on the outdoor unit.
- Heat is obtained from outdoor air to warm up the room. When the outdoor ambient air temperature falls, the heating capacity of the unit might be reduced.

Automatic Airflow Volume
- The speed of the Indoor fan is adjusted automatically according to the operation. The Indoor fan stops occasionally during cooling operation.

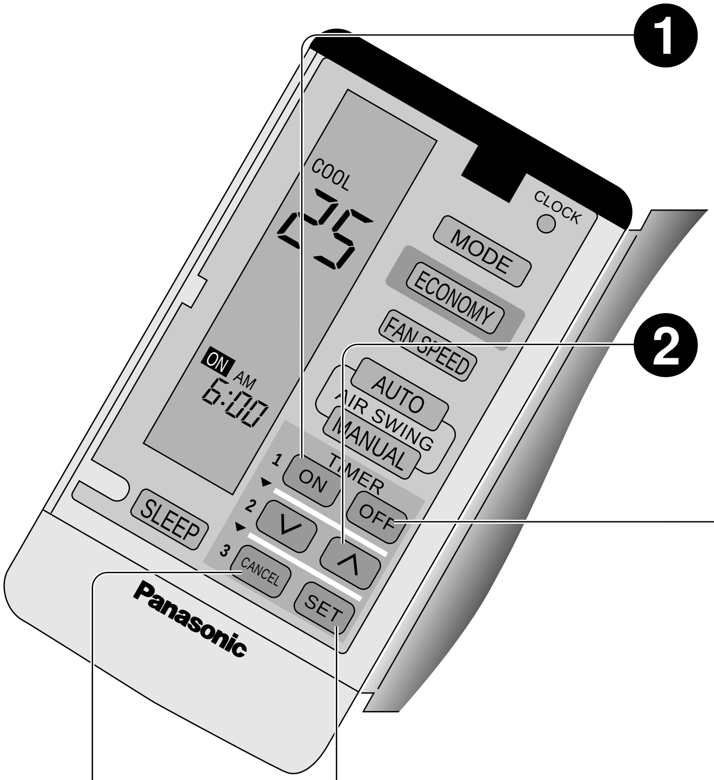
Louver adjustment range


Heating
Cooling
Soft Dry
36°
61°

※ Five stages of adjustments can be made in this range.

SETTING THE TIMER

Ensure that the current time is correct before setting the timer. The timer cannot be set if the time display is flashing.


COOL
25
CLOCK
MODE
ECONOMY
FAN SPEED
AUTO
AIR SWING
MANUAL
ON AM
6:00
TIMER
1 ON
OFF
2
3 CANCEL
SET
SLEEP
Panasonic

1 **Press ON-TIMER**

Flashes →

Example: Set the ON-TIMER to 7:00AM

2 Press to set the time

∧ Increase by 10 minutes

∨ Decrease by 10 minutes

※ Press continuously for quick setting.

3 **Press SET**

Lights up →

※ The timer indicator (orange) on the indoor unit will light up.

4 **To set the OFF-TIMER**
Press the OFF-TIMER then follow steps 2 and 3 as above.

- **Timer Cancellation Button**
  (To cancel the Timer)
  Press the ON-TIMER or OFF-TIMER then press CANCEL.
  ※ The timer indicator on the indoor unit will go off.
- **To change the setting time, follow the above steps.**

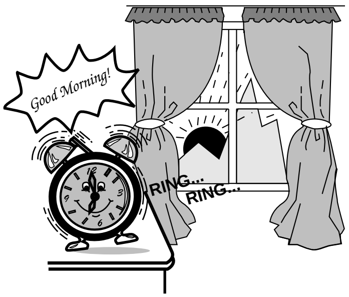
Timer details

- When the ON-Timer is set, operation will start before the actual set time. This is to allow the room temperature to reach the setting temperature by the setting time (Cooling and Soft dry, 15 minutes in advance. Heating and Automatic, 30 minutes in advance).
- Once the ON-Timer is set, operation will start at the setting time everyday.

Recommended Setting of Timer

When you sleep

- Set the time at which you will go to sleep with the OFF-TIMER. This prevent wastage of electricity.

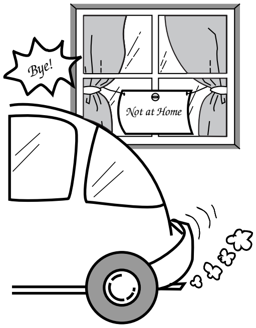

Good Morning!
RING...
RING...

When you wake up

- Set the time at which you will wake up with the ON-TIMER. You can start the new day at a comfortable temperature.

Note

(The above is an example of how you can used the OFF-TIMER and ON-TIMER mode.
However it is recommended to use the Sleep Mode function for sleeping.)



When going out

- Set the time at which you will go out with the OFF-TIMER. Set the time at which you will come back with the ON-TIMER.
- This will prevent the air conditioner from being left on while you are out, and the temperature will be pleasant when you return.

When you return

- Set the time at which you will return with the ON-TIMER.
- This will make the temperature pleasant when you return, and it will prevent the air conditioner from being left on.

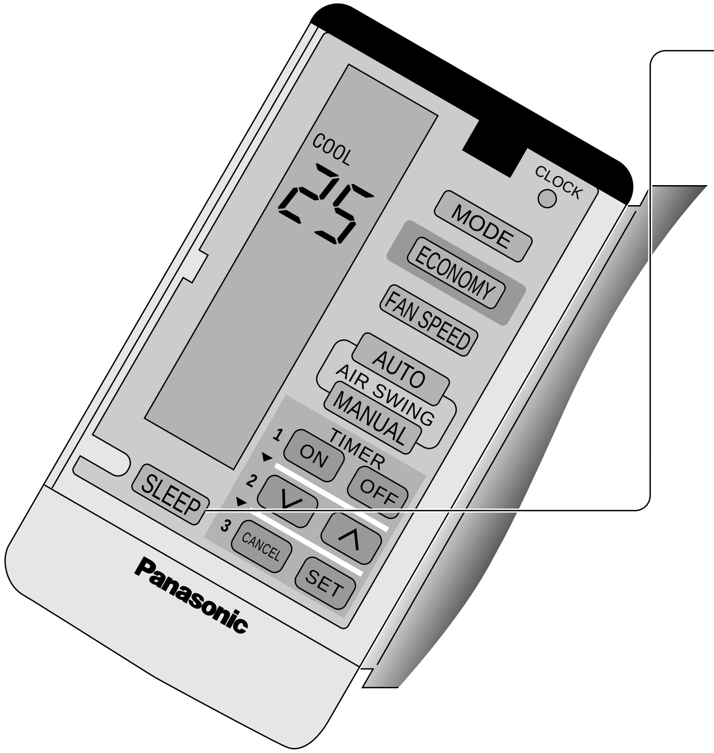
Timer details

- The current time is not displayed when the timers are set.
- When both timers are used together, the TIMER LED on the indoor unit remains lit even if the operation is stopped by the OFF-TIMER.

CONVENIENCE OPERATION

● Sleep Mode

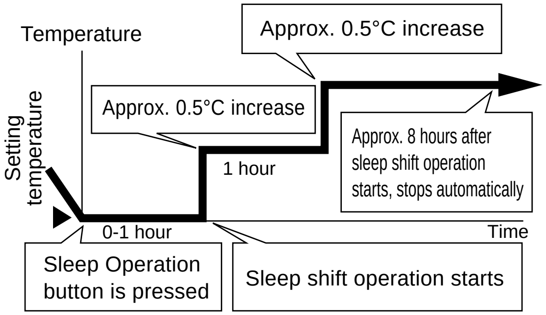
This is to obtain a comfortable room temperature while sleeping.

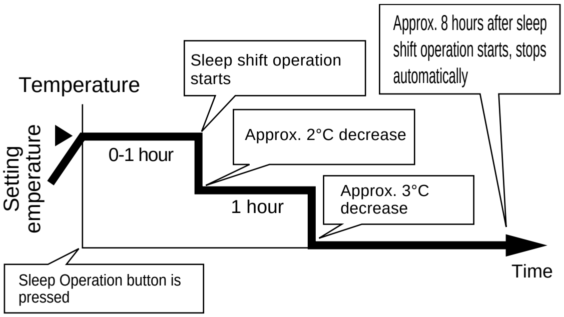

COOL
25
CLOCK
MODE
ECONOMY
FAN SPEED
AUTO
AIR SWING
MANUAL
TIMER
1
ON
OFF
2
3
CANCEL
SET
SLEEP
Panasonic

- ■ **To set the sleep mode, press SLEEP.**
  ※ The sleep indicator on the indoor unit will light up.
- ■ **To cancel the sleep mode, press once more.**

■ Operation details

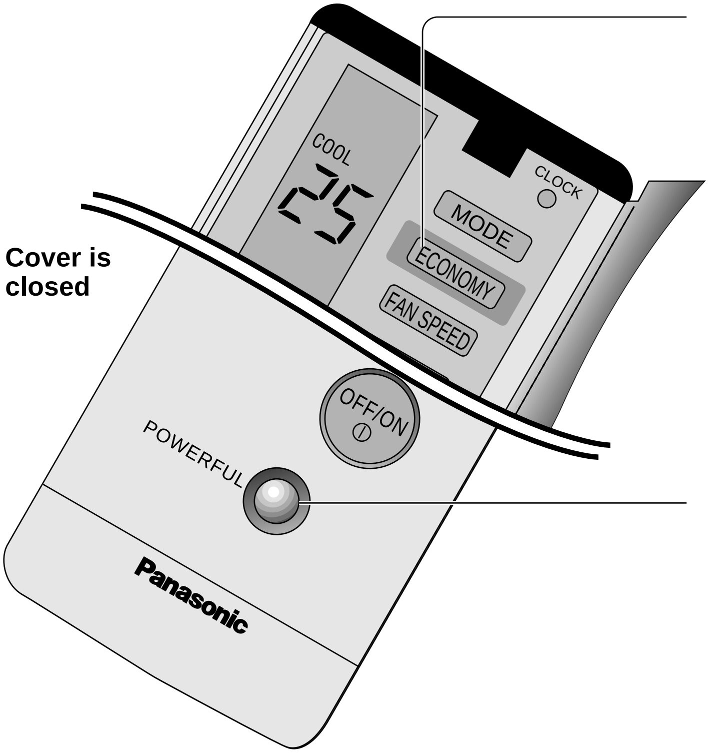
- When the room temperature reaches the setting temperature, the airflow volume will automatically change to low.
- Cooling or Soft Dry Operation for sleep mode movement will start to avoid overcooling.
- Heating operation for sleep mode movement will start to avoid overheating.
- Sleep Mode Operation time is 8 hours.
- When used together with the timer, the timer has priority.





● Economy or Powerful Mode

Economy and Powerful operation cannot be selected simultaneously.



Economy Mode
To save electrical power consumption.
However, please use this mode when the room have reached your desired temperature.

- Press ECONOMY

※ Economy indicator (Green) on indoor unit lights up.

- Press once more to cancel this operation.

Powerful Mode
To obtain the setting temperature quickly.

- Press POWERFUL

※ Powerful indicator (Orange) on indoor unit lights up.

※ Powerful mode will operate for 15 minutes only.

- To cancel this operation, press once more.

■ Operation details

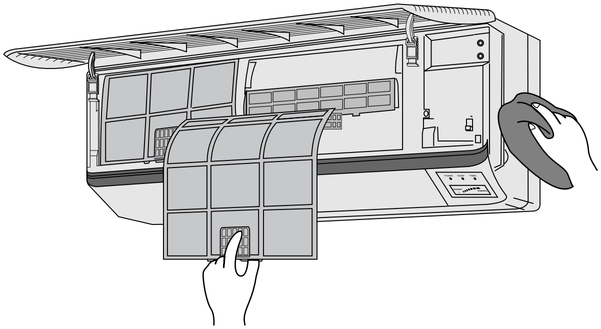
	Economy operation		Powerful operation	
	Temperature	Airflow volume	Temperature	Airflow volume
Cooling/Soft Dry	0.5°C higher than set temp.	Low (on and off)	3°C lower than set temp.	Super High
Heating	0.5°C lower than set temp.	Low (on and off)	3°C higher than set temp.	Automatic

※
- The changes of the temperature and airflow volume are automatic.
- The remote control display remain unchanged.
- If sleep button or operation mode button is pressed, economy or powerful operation is cancelled.
- During Fan-Air circulation operation, the powerful and economy operation are not available.
- During Economy mode, indoor fan operates on and off at Low speed.

CARE AND MAINTENANCE

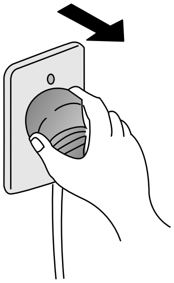
● Cleaning the Indoor Unit and Remote Control

- Wipe gently with a soft, dry cloth.
- Do not clean with water hotter than 40°C or with polishing fluids.
- The front panel can be removed and cleaned with water.



Caution

Switch OFF and unplug the power cord before cleaning the air conditioner.

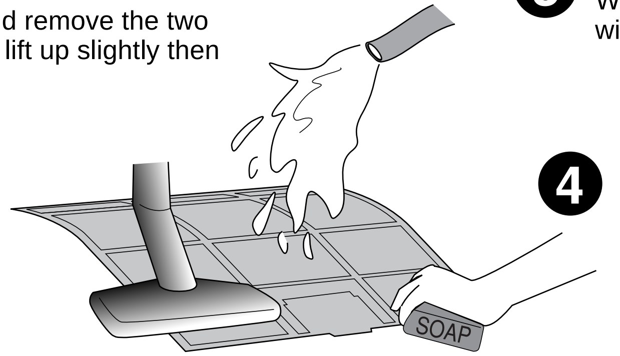


● Cleaning the Air Filter

(Recommendation:- If the unit is operated in a dusty environment, clean the filters every two weeks, continuous use of this dirty filters will reduce cooling efficiency)

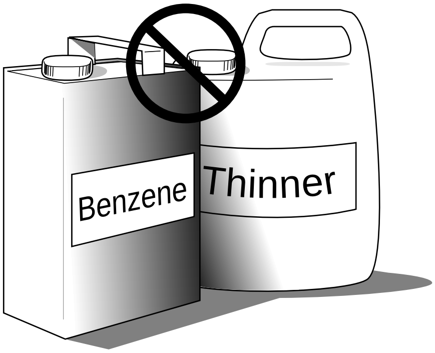
❶ Open the front grille and remove the two air filters. Hold the tab, lift up slightly then pull down.

❷ Remove dirt using a vacuum cleaner.



❸ Wash back of the air filter with water.

❹ If badly soiled, wash it with soap or a mild household detergent.



❺ Let it dry and reinstall it.
Be sure the “FRONT” mark is facing you.

※ **Damaged air filter.**
Consult the nearest authorized dealer.
Part No.: CWD00240.

- Do not clean using benzene, thinner, scouring powder or cloths soaked in caustic chemicals.

Cleaning the Front Panel

(Must be removed before washing)

⚠ Caution

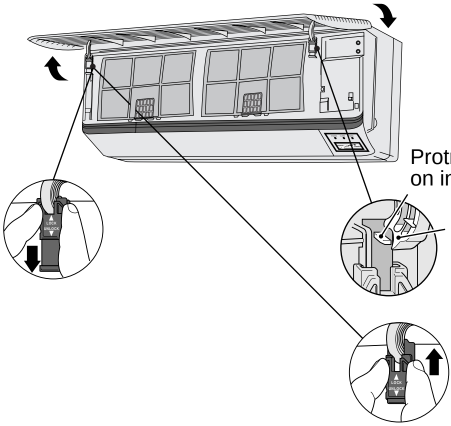
- Stand on a level surface when removing the front panel.
- Do not touch the metal parts in the indoor unit after removing the front panel.
- Do not leave water on the panel after cleaning. Dry thoroughly to prevent electric shock.

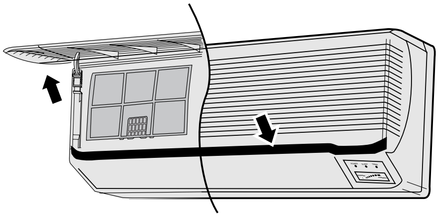
Removing the front panel

❶ Raise the front panel to its full extent.

❷ Slide the two tabs (left and right) to the UNLOCK position.

❸ Raise the front panel to a position slightly higher than horizontal and pull to remove.





Fixing the front panel

❶ Raise the front panel horizontally, match the protruding portion on the indoor unit to the fulcrum and push into place.

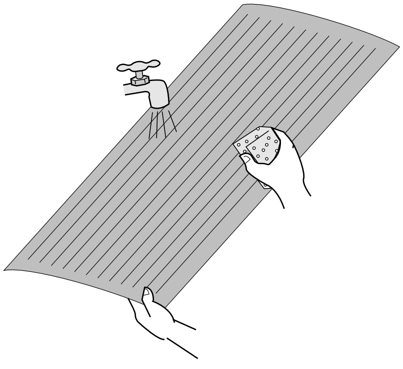
❷ Slide the two tabs up to the Lock position. (Click sound)

Note: If the tabs are left in the UNLOCK position, the front panel will not close.

※ If the panel does not close completely, check the tabs positions and try again.

Cleaning the front panel

- Gently wash with water and a sponge. (Do not use a scrubbing brush or other hard cleaning aids).
- Do not press the front panel too hard when washing. (Excess pressure may damage the panel).
- When cleaning with kitchen cleaning fluids (neutral detergents), rinse thoroughly. (Do not use non neutral detergents)
- Do not dry the front panel in direct sunlight. (Exposure to direct sunlight may discolor or deform the panel).

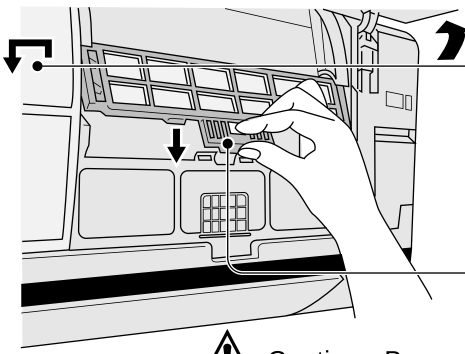


● Replacing the Air Purifying Filters

(Once every 3 month)

- Do not reuse dirty filters. Consult the nearest authorized dealer. (Air Purifying filter No. CZ-SF5N)
- These filters function effectively for not more than three months.
- If the air conditioner operates with dirty filters:-
  - Air is not purified
  - Cooling capacity decreases
  - Foul odours are emitted

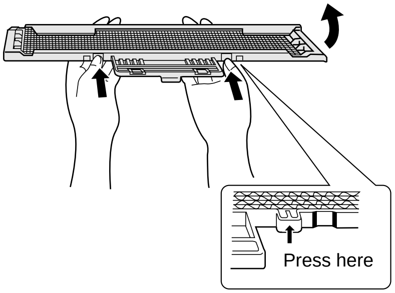
■ Removing the air purifying filters



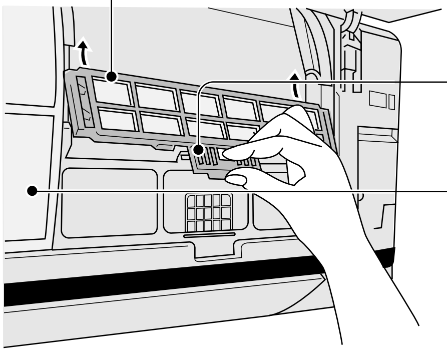
1. Raise the front panel to its full extent.
2. Remove the air filters (left and right).
   - Lift up slightly then pull down
3. Hold the tabs of the air purifying filters and pull.

⚠ Caution - Be careful not to hurt your hands on metal parts.

■ Reinstalling the air purifying filters



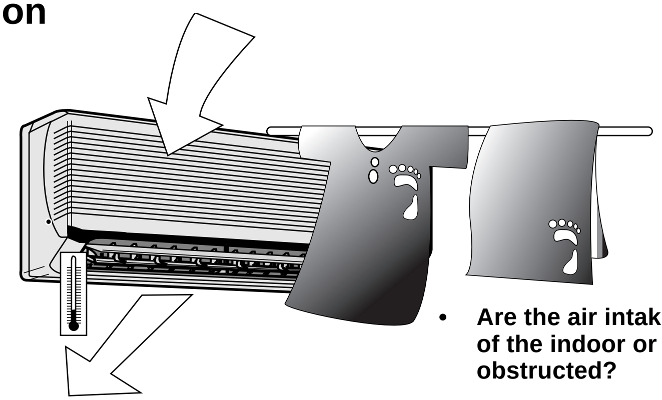
1. Open the filter frame to insert the new filters.
2. Insert the new air purifying filter.
   (Be sure the “FRONT” mark is facing you)



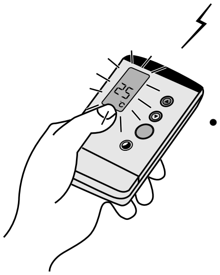
3. Push until you hear a click.
4. Reinsert the air filters.
5. Close the front panel after reinstalling the air purifying filters.

Pre-season Inspection

- **Is the discharge air cold warm**
  Operation is normal if 15 minutes after the start of operation, the difference between the air intake and outlet vents temperatures is 8°C or above for cooling.



- **Are the air intake or outlet vents of the indoor or outdoor units obstructed?**

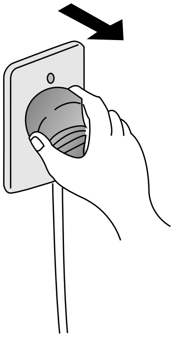


- **Are the remote control batteries weak?**
  If the remote control display appears weak, replace the batteries (page 12).

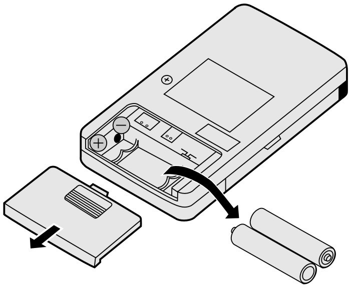
When the Air Conditioner is Not Used For an Extended Period of Time

1 To dry the internal parts of the indoor unit, operate the unit for 2 - 3 hours using Fan operation.

2 Turn off the power switch and remove the power supply plug.
Note: If the unit is not switched off by the remote control, it will start operating when you plug in (because a Auto Restart Control is provided).



3 Remove the remote control batteries.



Recommended Inspection

- The unit will become dirty after use over several seasons, reducing performance.
  Depending on the operation condition, a dirty unit may produce foul odours and dust may pollute the dehumidifying drainage.
  Seasonal inspection is recommended, in addition to regular cleaning. Consult an authorized dealer.

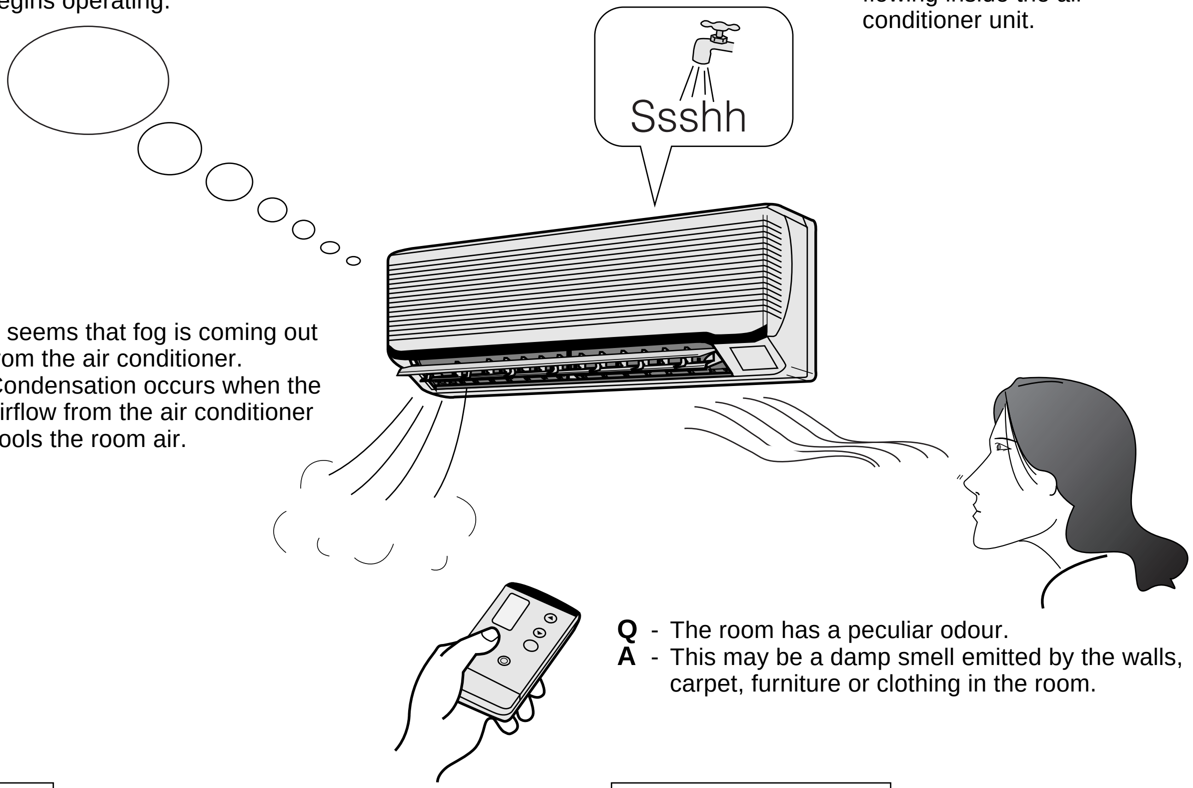
TROUBLESHOOTING

Normal Operation

Q - Is it okay? **A** - This is the answer.

Q - Air conditioner has been restarted, but does not operate for 3 minutes.
A - This is to protect the air conditioner. Wait until the air conditioner begins operating.

Q - A sound like water flowing can be heard.
A - This is the sound of refrigerant flowing inside the air conditioner unit.



Q - It seems that fog is coming out from the air conditioner.
A - Condensation occurs when the airflow from the air conditioner cools the room air.

Q - The room has a peculiar odour.
A - This may be a damp smell emitted by the walls, carpet, furniture or clothing in the room.

DRY

Q - During soft dry mode operation the air conditioner stops.
A - Soft Dry Mode operation is a very gentle cooling operation consisting primarily of dehumidifying. The air conditioner may stop for approximately 6 minutes in order to prevent overcooling. If the room temperature rises again, the operation will recommence.

AUTO FAN

Q - During Automatic Airflow Volume setting, Indoor fan stops occasionally.
A - This is to remove the smell emitted by the surroundings.

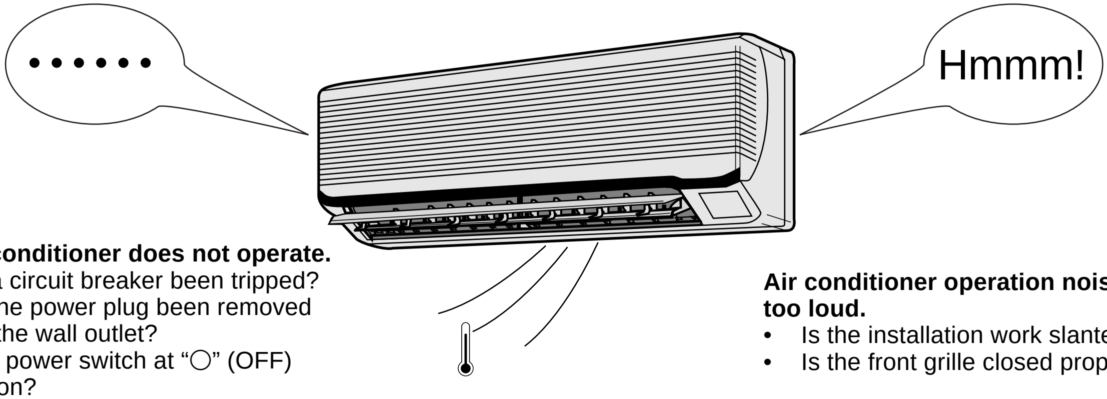
HEATING OPERATION

Q - During heating operation, indoor fan may run at on and off conditions.
A - This to prevent undesired cooling effect during heating operation.

HEATING OPERATION

Q - Operation stops for about 12 minutes during heating. (The operation lamp blinks)
A - This is to melt the frost which has accumulated on the outdoor unit (defrosting operation). This will take no longer than about 12 minutes, so wait for operation. (Frost accumulates on the outdoor unit when the outdoor temperature is low and humidity is high.) Water comes out from the outdoor unit.

● Abnormal Operation



The air conditioner does not operate.
- Has a circuit breaker been tripped?
- Has the power plug been removed from the wall outlet?
- Is the power switch at “○” (OFF) position?
- Is the timer being used correctly?
- Has the remote control B↔A switch been set correctly?

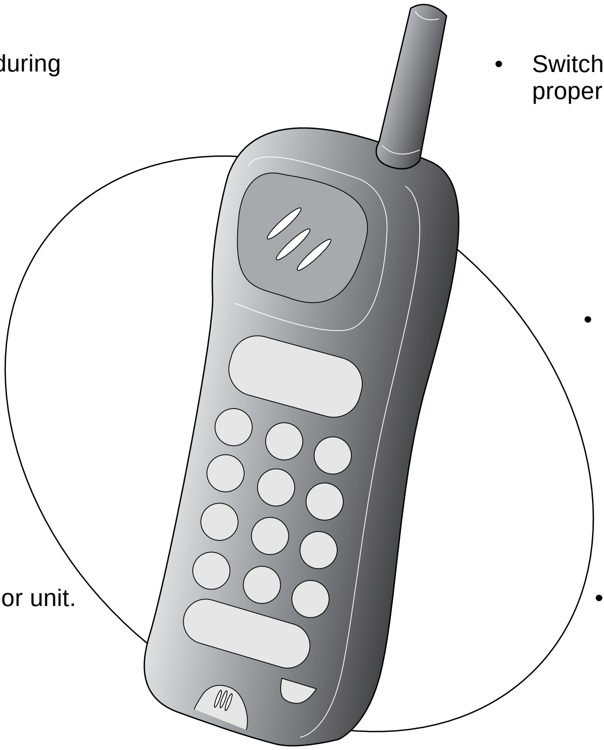
Air conditioner operation noise too loud.
- Is the installation work slanted?
- Is the front grille closed properly?

The air conditioner does not cool effectively.
- Has the temperature been set incorrectly?
- Are the filters dirty?
- Are the intake or outlet vents of the outdoor unit obstructed?
- Are all windows and doors closed?

● Call the Dealer Immediately

If the following conditions occur, immediately turn the power switch to “○” (OFF) and unplug.

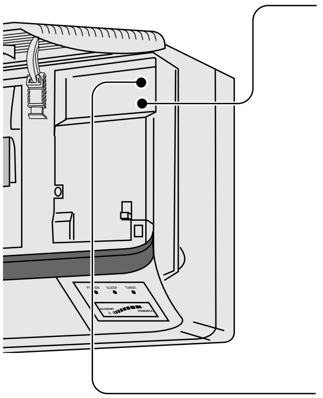
- Abnormal noise is heard during operation.
- Switches or buttons do not operate properly.



- Water or foreign material gets into the remote control by mistake.
- The circuit breaker switches off frequently.
- Water leaks from the indoor unit.
- Power supply cord and plug become unusually warm.

HELPFUL INFORMATION

Auto Operation and Test Run Button



Auto Operation Button

(If remote control fails to function or misplaced)

❶ Press the Auto Operation Button for automatic operation. But the temperature cannot be adjusted.

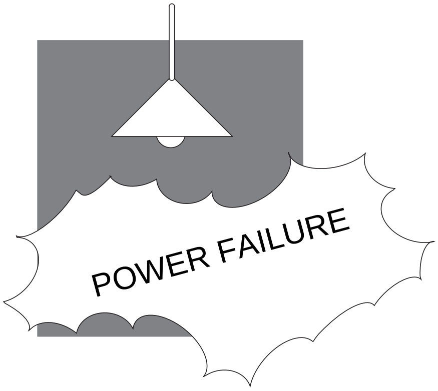
※ The power LED on indoor unit blinks until the operation mode is selected automatically.

❷ To cancel, press once more.

Test Run Button

For installation or servicing purpose only.

- To switch off the beep (signal received) sound, press the Auto Operation Button at the indoor unit for 10 seconds or longer.
  Repeat the above if you want to switch on the beep sound.

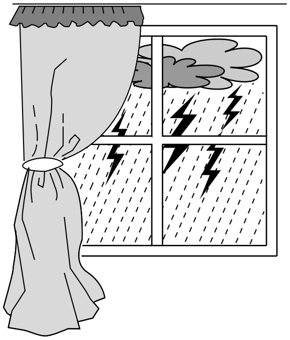


Auto Restart Control

- If power is resumed after a power failure, the operation will restart automatically after 3 - $5\frac{1}{2}$ minutes.
- Operation will be automatically restart under the previous operation mode and airflow direction when power is resumed as the operation is not stopped by remote control.

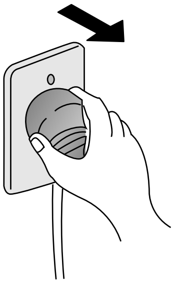
Timer Setting

- When power failure occurs, the timer setting is cancelled. Once power is resumed, reset the timer.

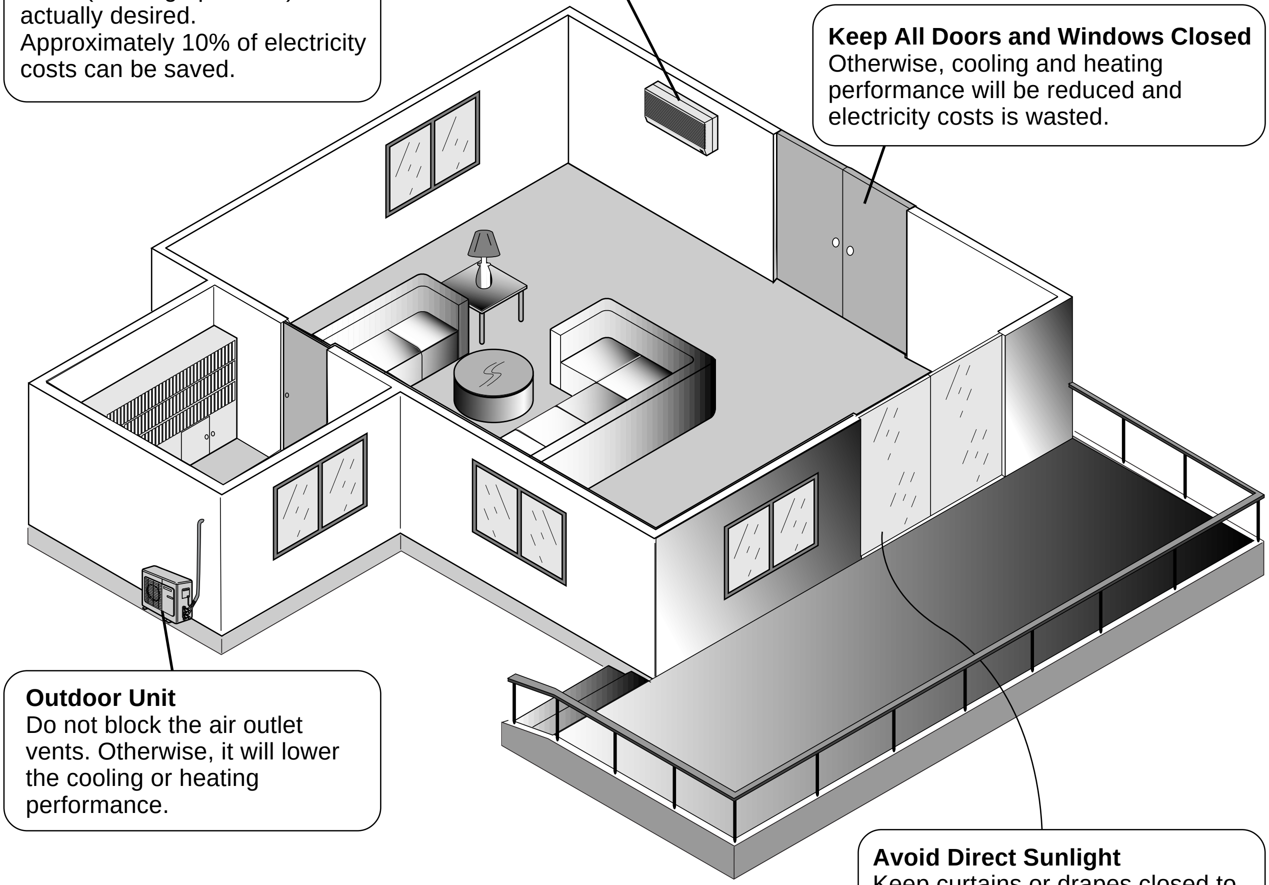


Thunder and Lightning

- Whenever there is lightning, stop operation to protect the air conditioner.
  Turn the power switch to OFF, then unplugged the power supply plug.



ENERGY SAVING AND OPERATION HINTS



Setting Temperature
Set the temperature 1°C higher (Cooling operation) or 2°C lower (Heating operation) than actually desired.
Approximately 10% of electricity costs can be saved.

Air Filter and Air Purifying Filter
Clean the air filter every 2 weeks and change the Air Purifying Filter every 3 months. Dirty filter may reduces cooling efficiency.

Keep All Doors and Windows Closed
Otherwise, cooling and heating performance will be reduced and electricity costs is wasted.

Outdoor Unit
Do not block the air outlet vents. Otherwise, it will lower the cooling or heating performance.

Avoid Direct Sunlight
Keep curtains or drapes closed to keep out direct sunlight during cooling operation.

Timer and Sleep Mode
To prevent wastage of electricity, use sleep mode when sleeping or Timer when going out to save electricity cost.

⚠ Warning

1) If the supply cord is damaged or need to be replaced, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

2) Remove power plug or disconnect from the mains before servicing this appliance.

3) Do not repair by yourself.
In case of malfunction of this appliance, do not repair by yourself.
Contact to the sales dealer or service dealer for a repair.

4) The appliance is not intended for use by young children or infirm persons without supervision.

5) Young children should be supervised to ensure that they do not play with the appliance.

6) Turn off the power (Isolation from main power supply).
Pull off the power plug from the receptacle, or switch off the breaker, or switch off the power disconnecting mean to isolate the equipment from the main power supply in case of an emergency.

⚠ Caution

DISCONNECT THE MAINS PLUG FROM THE SUPPLY SOCKET WHEN NOT IN USE, WHERE SUPPLY CONNECTION IS VIA MAINS PLUG.

IMPORTANT

1. WHEN THE POWER CORD IS CONNECTED TO THE MAINS THROUGH A MULTI POLAR SWITCH

THERE MUST BE A MULTI POLAR SWITCH (DISCONNECTING MEANS) WITH A MINIMUM 3 mm CONTACT GAP IN THE FIXED INSTALLATION CIRCUIT.

2. WHEN THE POWER PLUG IS CONNECTED TO THE RECEPTACLE

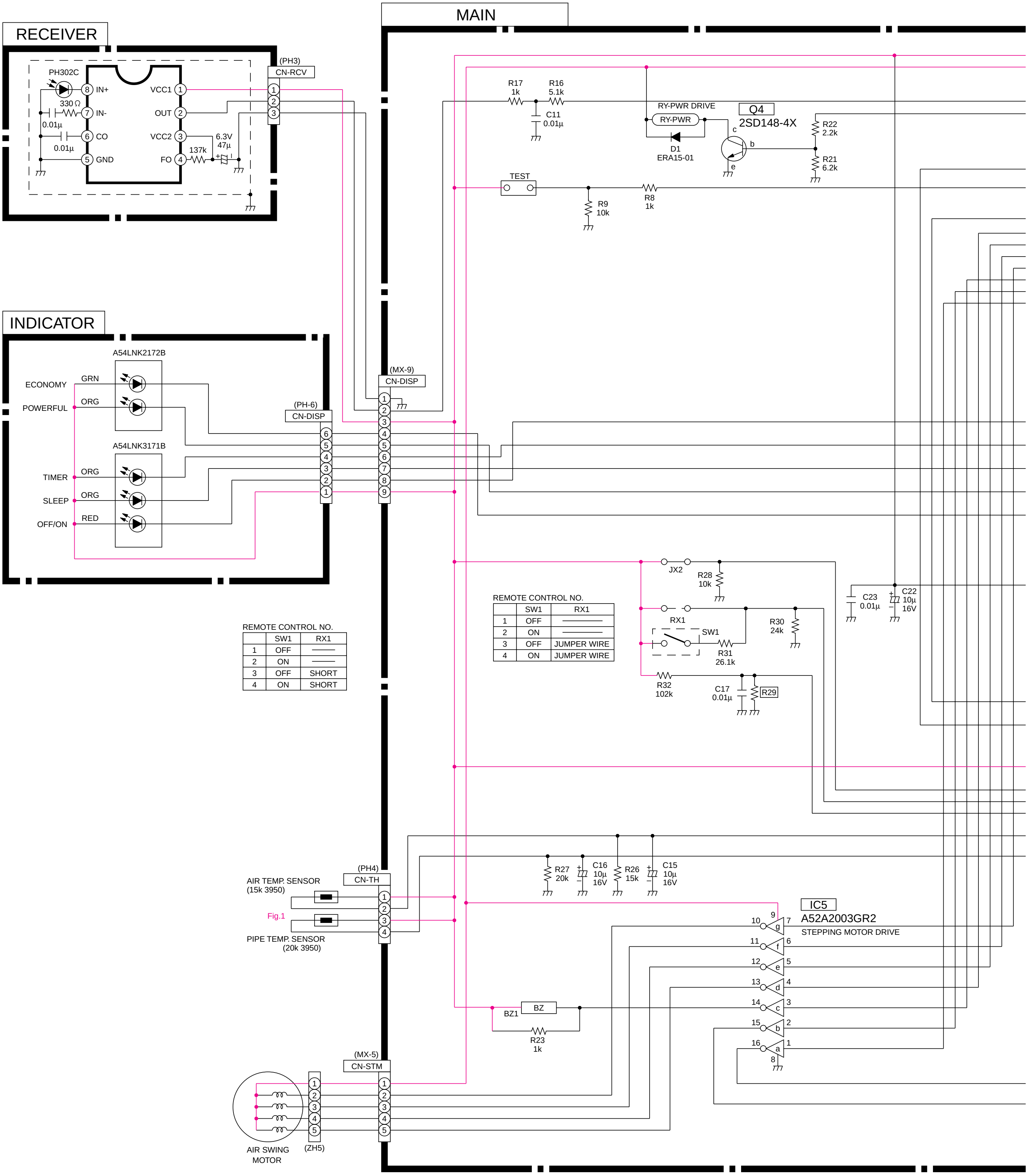
The wires in this main lead are coloured in accordance with the following code :

Green-and-yellow : Earth
Blue : Neutral
Brown : Live

If the colours of the wires in the main lead of this appliance do not correspond with the coloured markings indentifying the terminals in your plug, proceed as follows :
The green-and-yellow wire must be connected to the terminal in the plug which is marked with letter E or by the earth symbol ⏚ or coloured green or green-and-yellow.
The blue wire must be connected to the terminal which is marked with the letter N or coloured black.
The brown wire must be connected to the terminal which is marked with the letter L or coloured red.

• CS- A73KR / CU-A73KR
• CS- A93KR / CU-A93KR
• CS- A123KR / CU-A123KR

SCHEMATIC DIAGRAM 1/3


MAIN
RECEIVER
PH302C
8 IN+
330Ω
7 IN-
0.01µ
6 CO
0.01µ
5 GND
VCC1 1
OUT 2
VCC2 3
FO 4
137k
6.3V
47µ
(PH3)
CN-RCV
1
2
3
INDICATOR
A54LNK2172B
ECONOMY
GRN
POWERFUL
ORG
A54LNK3171B
TIMER
ORG
SLEEP
ORG
OFF/ON
RED
(PH-6)
CN-DISP
6
5
4
3
2
1
(MX-9)
CN-DISP
1
2
3
4
5
6
7
8
9
R17
1k
R16
5.1k
C11
0.01µ
RY-PWR DRIVE
RY-PWR
D1
ERA15-01
Q4
2SD148-4X
c
b
e
R22
2.2k
R21
6.2k
TEST
R9
10k
R8
1k
JX2
R28
10k
RX1
SW1
R31
26.1k
R30
24k
R32
102k
C17
0.01µ
R29
C23
0.01µ
C22
10µ
16V
(PH4)
CN-TH
AIR TEMP. SENSOR
(15k 3950)
Fig.1
PIPE TEMP. SENSOR
(20k 3950)
1
2
3
4
R27
20k
C16
10µ
16V
R26
15k
C15
10µ
16V
IC5
A52A2003GR2
STEPPING MOTOR DRIVE
9
10
11
12
13
14
15
16
8
7
6
5
4
3
2
1
g
f
e
d
c
b
a
BZ1
BZ
R23
1k
(MX-5)
CN-STM
1
2
3
4
5
AIR SWING
MOTOR
(ZH5)

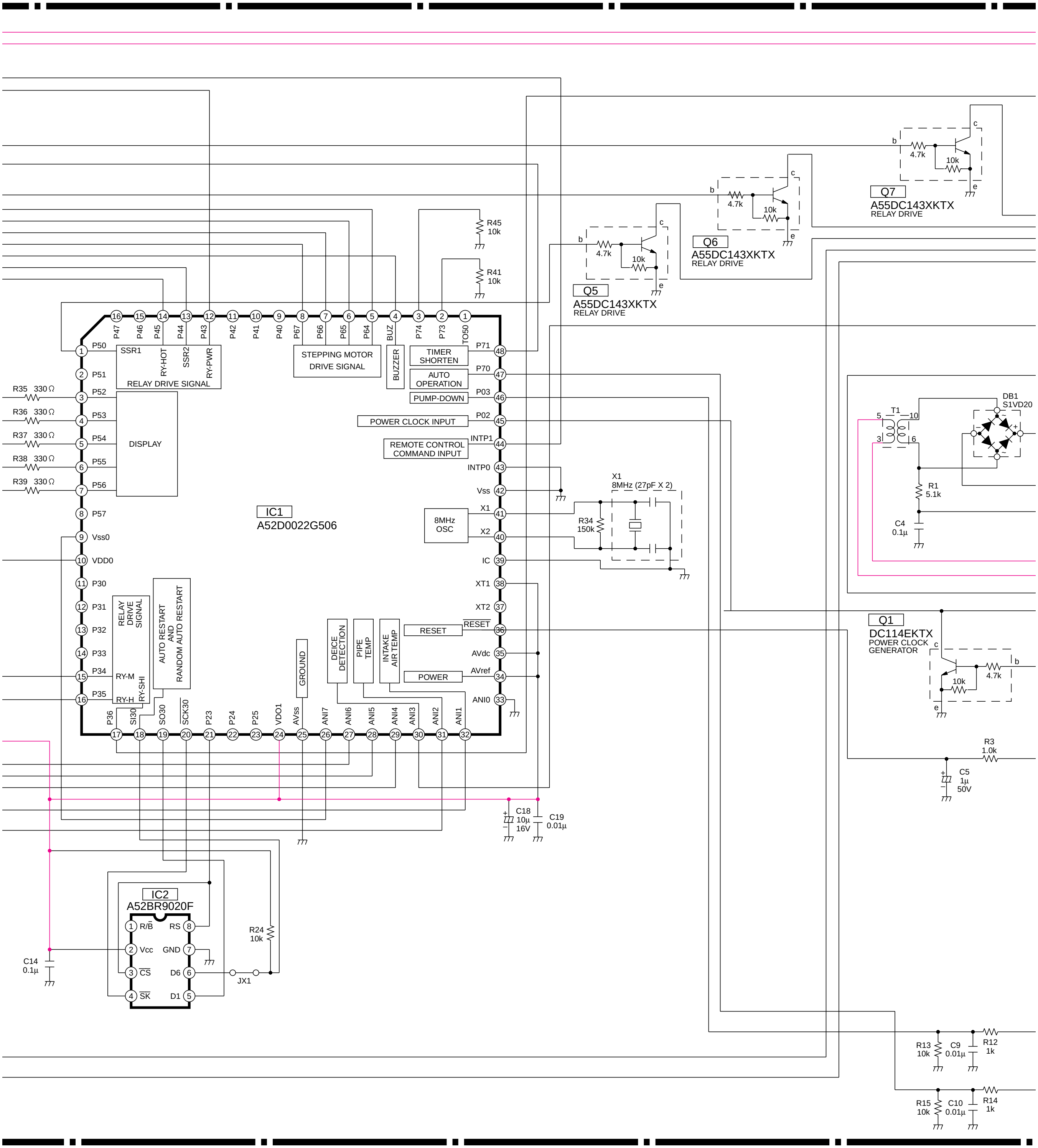
REMOTE CONTROL NO.

	SW1	RX1
1	OFF	———
2	ON	———
3	OFF	SHORT
4	ON	SHORT

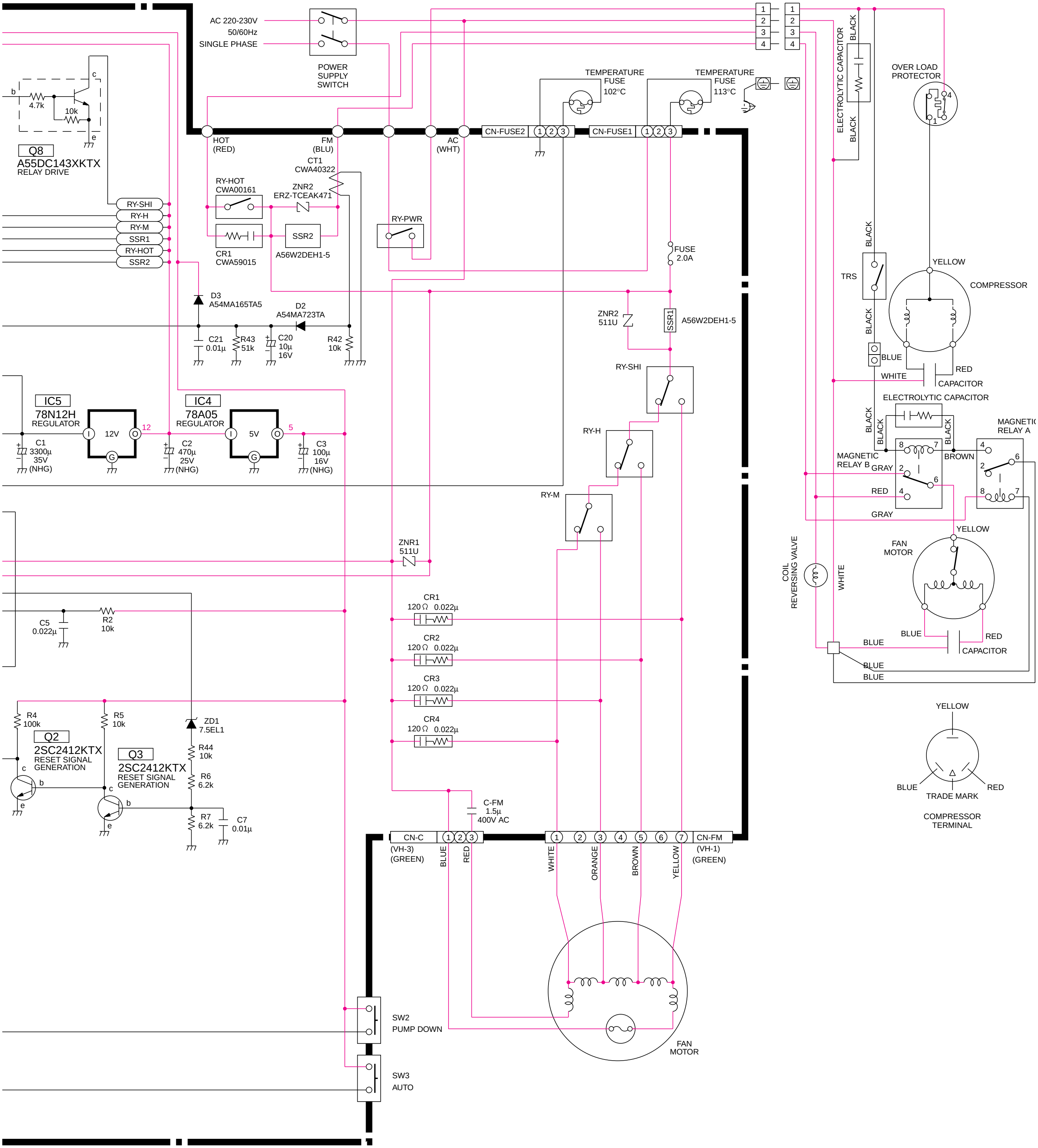
REMOTE CONTROL NO.

	SW1	RX1
1	OFF	———
2	ON	———
3	OFF	JUMPER WIRE
4	ON	JUMPER WIRE

SCHEMATIC DIAGRAM 2/3


IC1
A52D0022G506
P50
P51
P52
P53
P54
P55
P56
P57
Vss0
VDD0
P30
P31
P32
P33
P34
P35
P47
P46
P45
P44
P43
P42
P41
P40
P67
P66
P65
P64
BUZ
P74
P73
TO50
P71
P70
P03
P02
INTP1
INTP0
Vss
X1
X2
IC
XT1
XT2
RESET
AVdc
AVref
ANI0
P36
SI30
SO30
SCK30
P23
P24
P25
VDD1
AVss
ANI7
ANI6
ANI5
ANI4
ANI3
ANI2
ANI1
SSR1
RY-HOT
SSR2
RY-PWR
RELAY DRIVE SIGNAL
STEPPING MOTOR
DRIVE SIGNAL
BUZZER
TIMER
SHORTEN
AUTO
OPERATION
PUMP-DOWN
POWER CLOCK INPUT
REMOTE CONTROL
COMMAND INPUT
DISPLAY
8MHz
OSC
RESET
POWER
RELAY
DRIVE
SIGNAL
RY-M
RY-H
RY-SHI
AUTO RESTART
AND
RANDOM AUTO RESTART
GROUND
DEICE
DETECTION
PIPE
TEMP
INTAKE
AIR TEMP
R35 330Ω
R36 330Ω
R37 330Ω
R38 330Ω
R39 330Ω
R45
10k
R41
10k
Q5
A55DC143XKTX
RELAY DRIVE
Q6
A55DC143XKTX
RELAY DRIVE
Q7
A55DC143XKTX
RELAY DRIVE
4.7k
10k
b
c
e
X1
8MHz (27pF X 2)
R34
150k
C18
10µ
16V
C19
0.01µ
IC2
A52BR9020F
R/B
Vcc
CS
SK
RS
GND
D6
D1
R24
10k
JX1
C14
0.1µ
T1
5
10
3
6
DB1
S1VD20
R1
5.1k
C4
0.1µ
Q1
DC114EKTX
POWER CLOCK
GENERATOR
R3
1.0k
C5
1µ
50V
R13
10k
C9
0.01µ
R12
1k
R15
10k
C10
0.01µ
R14
1k

SCHEMATIC DIAGRAM 3/3


AC 220-230V
50/60Hz
SINGLE PHASE
POWER
SUPPLY
SWITCH
1
2
3
4
BLACK
ELECTROLYTIC CAPACITOR
BLACK
OVER LOAD
PROTECTOR
4
1
TEMPERATURE
FUSE
102°C
TEMPERATURE
FUSE
113°C
b
4.7k
c
10k
e
Q8
A55DC143XKTX
RELAY DRIVE
HOT
(RED)
FM
(BLU)
AC
(WHT)
CN-FUSE2
CN-FUSE1
CT1
CWA40322
RY-HOT
CWA00161
ZNR2
ERZ-TCEAK471
RY-SHI
RY-H
RY-M
SSR1
RY-HOT
SSR2
CR1
CWA59015
SSR2
A56W2DEH1-5
RY-PWR
FUSE
2.0A
BLACK
TRS
YELLOW
COMPRESSOR
BLACK
BLUE
RED
WHITE
CAPACITOR
D3
A54MA165TA5
D2
A54MA723TA
C21
0.01µ
R43
51k
C20
10µ
16V
R42
10k
ZNR2
511U
SSR1
A56W2DEH1-5
RY-SHI
ELECTROLYTIC CAPACITOR
BLACK
BLACK
BLACK
MAGNETIC
RELAY A
8
7
BROWN
4
6
2
MAGNETIC
RELAY B
GRAY
2
6
RED
4
8
7
GRAY
IC5
78N12H
REGULATOR
12V
12
IC4
78A05
REGULATOR
5V
5
I
O
G
C1
3300µ
35V
(NHG)
C2
470µ
25V
(NHG)
C3
100µ
16V
(NHG)
RY-H
RY-M
YELLOW
FAN
MOTOR
ZNR1
511U
COIL
REVERSING VALVE
WHITE
CR1
120Ω 0.022µ
CR2
120Ω 0.022µ
CR3
120Ω 0.022µ
CR4
120Ω 0.022µ
C5
0.022µ
R2
10k
BLUE
BLUE
RED
CAPACITOR
BLUE
BLUE
R4
100k
R5
10k
ZD1
7.5EL1
Q2
2SC2412KTX
RESET SIGNAL
GENERATION
Q3
2SC2412KTX
RESET SIGNAL
GENERATION
R44
10k
R6
6.2k
c
b
e
c
b
e
R7
6.2k
C7
0.01µ
YELLOW
BLUE
RED
TRADE MARK
COMPRESSOR
TERMINAL
C-FM
1.5µ
400V AC
CN-C
(VH-3)
(GREEN)
BLUE
RED
1
2
3
4
5
6
7
CN-FM
(VH-1)
(GREEN)
WHITE
ORANGE
BROWN
YELLOW
FAN
MOTOR
SW2
PUMP DOWN
SW3
AUTO